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**Impact of the smoke-free workplace legislation on smoking
behaviour, risk perception & stigmatisation**

**Thesis submitted for the degree of
Doctor of Philosophy**

to the

**Faculty of Medicine and Health,
National University of Ireland Cork**

By

Bernie J Lonergan

September 2013

**Based on work carried out at
The Department of Epidemiology and Public Health
National University of Ireland, Cork**

**Head of Department Prof. Ivan Perry
Under the supervision of Dr. Birgit Greiner MPH PhD**

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Declaration of Authorship

The candidate has taken responsibility for all aspects of the work presented in this thesis. I coordinated or personally carried out all of the data collection. I was responsible for all the data analysis, seeking advice on specific points as necessary from my supervisor and other colleagues in the Department. This material has been submitted for no other degree.

Signed: Bernie Lonergan (Mullally)

Bernie Lonergan

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Bernie Lonergan's' Role in the SmofrI Study

This PhD is an original piece of research conducted by Bernie Lonergan as part of the **Smoke free Ireland** (SmofrI) study on tobacco, risk & social change. The SmofrI study was under the supervision of the Principal Investigator Dr. Birgit Greiner, Department of Epidemiology and Public Health, University College Cork. Bernie was involved in the study from the beginning including the conceptual stage, she assisted with the writing of the HRB grant, was involved in all aspects of study design, administration including ethical approvals. Bernie was responsible for the data collection, data management, data analyses, publication writing and thesis write-up. Bernie has presented this work at numerous national and international conferences (please see appendix 2 for list of conference presentations). Bernie also assisted Dr Greiner with the HRB final report.

Additional training received during PhD:

- STEPS (Scientific Training for Enhanced Postgraduate Study) (PG6001 5 credits) Introduction to principles and practice of scientific research and communication
- HRB scientific writing workshop 2006
- UCC academic writing & publication workshop 2007 (participant in writing group)
- 'How to writing a paper' in-house training with Dr Harry Comber (1 day)

- ‘Essential Statistics in Medicine and the Health Sciences’ on-line training (7 modules & assignments) with SAHRU Trinity College Dublin
- John Hopkins Bloomberg School of Public Health on-line training course ‘Global Tobacco Control’ 10 modules covering key areas of Tobacco Control e.g. Tobacco industry, economics & best practice
- Postgraduate Certificate in Teaching and Learning in Higher Education (TL4000 15 Credits (Sep – March 2009); portfolio on ‘Teaching statistics to medical students’)

Justification for this research

Before I started this research project, few studies have examined changes in smoking behaviour before and after a national smoke-free workplace legislation among affected workers in general [1] or hospitality industry workers in particular [2-3]. The Irish Smoke-free legislation, as the first such law in Europe, provided the opportunity to investigate potential short and medium term outcomes. Medium and long-term health, behavioural and social outcomes are still not well investigated.

Given the level of controversy associated with and the need for evidence to support tobacco control measures at national and international level, it was imperative to assess the impact of this measure rigorously.

The findings from this evaluation will make, and most likely have already made, significant contribution to the international understanding of the health effects of smoke-free legislation as well as the broader social and cultural consequences of such legislation.

Foreword

The focus of all smoke-free workplace legislation is to protect the health of workers from the harmful effects of second-hand smoke (SHS) exposure. Smoke-free workplace legislation reduces occupational exposure to SHS and may have additional health benefits including a reduction in smoking prevalence rates, an increase in smoking risk knowledge and an reduce initiation and increased cessation rates due to the intensification of the de-normalisation of smoking. This PhD work will focus on the smoke-free workplace legislation in the Republic of Ireland but will emphasise the impact of the legislation on active smoking. This evaluation is from a population health perspective with a specific exploration of some occupational groups.

Our research project, the **Smoke free Ireland** (SmofrI) study on tobacco, risk & social change incorporated 3 separate studies; **1)** bar workers study (quantitative) **2)** smoking risk perception among the general population and general practitioners (quantitative) and **3)** stigmatisation of smokers and smoking behaviour among the general population (qualitative). The research was principally localised in the Cork region of Republic of Ireland, the context for this research can be found in appendix 1.

The main research team were: Principal Investigator Dr. Birgit Greiner, Senior Researcher Ms Bernie Lonergan (Mullally) and Researcher Ms Sarah Meaney. Additional researchers were recruited to assist with telephone interviews with the general practitioner sample and to assist in data collection among bar workers. The qualitative component was co-supervised by Dr. Orla O'Donovan PhD from the School of Applied Social Studies, University College Cork.

Overview of the thesis

The introductory chapter gives a general overview of the subject area and general epistemological approach taken with this thesis. I will examine the influence of the smoke-free workplace legislation, enacted in 2004, on smoking behaviour, risk perception and cultural change in the Republic of Ireland. Following this the general aims and specific objectives addressed by the research will be outlined.

This PhD thesis consists of 4 papers, 2 of which are now published. Finally, I have included a discussion of the main findings followed by recommendations.

ABSTRACT

Background

The Republic of Ireland became the first European country to implement nationwide smoke-free workplace legislation. Evidence on effects of the legislation on smoking behaviour, risk knowledge, de-normalisation and stigmatisation of smokers was scarce at the time of the implementation of the policy.

Aims

To investigate the prevalence of smoking among bar workers and estimate the impact of the smoke-free workplace legislation on bar workers' smoking behaviour to that of a comparable general population sub-sample. To approximate the influence of tobacco control measures including the smoke-free legislation on risk perception of second-hand smoke (SHS) among the general population. To explore the responses of smokers and non-smokers to the legislation, to examine the de-normalisation of smoking behaviour and the potential increased stigmatisation of smokers and their smoking.

Methods

This thesis used an integrated mixed methods approach combining the epidemiological with a social science approach. The underlying framework is a socio-ecological model that looks beyond the individual to integrate the broader social and political impacts of the smoke-free legislation.

Prevalence estimates and behavioural changes were examined among a random sample of bar workers before and 1 year after the smoke-free legislation. Comparisons were made with a general population sample from the Office of Tobacco Control. Changes in risk knowledge related to SHS exposure before and after the legislation were based on general population data from TNS-mrbi market research company and a General Practitioner (GP) sample from Cork and Kerry region of Ireland. Qualitative interviews were conducted among a purposive sample of smokers and non-smokers four years after the implementation of the legislation.

Results

Bar workers had an extremely high smoking prevalence at 54% compared to the equivalent group within the general population (28%). Smoking prevalence dropped in bar workers and significantly among the general population sub-sample 1 year post ban while cigarette consumption dropped significantly among bar workers. Knowledge of risk associated with SHS exposure improved over time and disparity in knowledge between smokers and non-smokers reduced. The lack of understanding of the risk of ear infections in children posed by SHS exposure was notable. Evidence for advanced de-normalisation of smoking behaviour and intensification of stigma because of the introduction of the legislation was dependent on many factors, with the quality of smoking facilities playing a key role. The provision of comfortable surroundings, music and opportunities to continue to drink within smoking areas may counter the potential de-normalisation and stigmatising effects of the smoke-free legislation.

Conclusions

Ireland's smoke-free legislation was associated with a drop in prevalence and cigarette consumption. Disparity in knowledge between smokers and non-smokers of the risk posed by SHS exposure is reducing however the risks of ear infections in children needs to be effectively published and disseminated among the general population. This research points to the de-normalising effects of the legislation without a possible furthering of the stigmatisation of smokers and their behaviour in the context of the pub. However, consideration is needed on how the proliferation of 'good' smoking areas and the role of non-smokers may diminish the potential effects of the legislation to reduce smoking behaviour and de-normalise smoking.

Key Terms & Abbreviations

Second-hand smoke (SHS), Smoke-free workplace legislation, Smoke-free legislation, Smoking ban, Smoking law, Risk perception, Stigma, Stigmatisation, De-normalisation, Pub, Bar, Tobacco control.

Chapter 1 Introduction

1. Smoking and Health

Active smoking and health

Active smoking is still the leading cause of premature preventable death in western societies including Ireland; and is a major cause of health inequalities. At present, there are about 1.3 billion smokers in the world, and it is estimated that there are currently 4 million tobacco attributable deaths each year; with current trends driving this to rise to 10 million deaths per year by the 2030s [4]. Ireland ranks as the second highest for smoking-related deaths within the EU original group of 15 Member States. As a result, approximately 7000 deaths are attributable to smoking each year in Ireland [5].

Second-hand smoke and health

Second-hand smoke (SHS) contains over 4,000 compounds including more than 50 known or suspected human carcinogens and was classified as a class I carcinogen in 2002, by the International Agency for Research in Cancer (IARC). Exposure to SHS increases the risk of lung cancer [6-7], cardiovascular [8-9] and respiratory diseases [10-14], low birth weight [15], sudden infant death [15] and ear infections in children [16-17].

SHS in the workplace poses 200 times the acceptable risk for lung cancer and 2000 times the acceptable risk for heart disease [18]. In the UK, Jamrozik [19] estimated 617 deaths per year due to workplace SHS exposure, including 54 deaths in the hospitality industry each year. Woodward & Laugesen [20] estimated that between 174–490 avoidable deaths per year would be caused by SHS in New Zealand without smoke-free laws.

2. The general context: Tobacco Control in Ireland

The legislative ban was preceded by a multitude of tobacco control measures including media campaigns, tobacco advertising and sponsorship bans, tobacco sales restrictions and smoke-free workplace policies, smoke-free public transport and smoke-free cinemas. Pre-existing smoke-free policies exempted a number of worksites including pubs, restaurants, betting offices and prisons until 2004.

A report commissioned by the Office of Tobacco Control (OTC) and Health and Safety Authority in Ireland, concluded that effective ventilation in bars and restaurants was not practicable and that a smoke-free legislation remained the only viable control measure to

ensure that workers and patrons of bars, nightclubs and restaurants are protected from exposure to the toxic by-products of tobacco combustion [21]. Based on this increasing evidence of the harmful effects of SHS public health advocates (Ash Ireland, the Office of Tobacco Control, the Department of Health, Minister for Health Martin, Irish Cancer Society and the medical profession), trade unions (SIPTU, Mandate and Impact) and others (EU Commission the Health & Safety Authority) lobbied the Irish government to ban smoking in all indoor workplaces including bars and restaurants. The release of this report together with increased evidence of the adverse health effects of SHS and the Framework Convention on Tobacco Control (FCTC) calling on member states to provide adequate protection from SHS in the workplace; prompted the Irish government to take action by implementing a ban on smoking in the workplace.

The ban was not without its opponents. As the Tobacco industry was unable to lobby directly in Ireland due to legal constraints [22-24] they were absent from the debate. However a pressure group, Irish Hospitality Industry Alliance [25], emerged as opponents after the announcement of the intended law. The Tobacco Control advocates believed this pressure group to be partly sponsored by the tobacco industry [5]. Critics of the law were sceptical of the ban's potential success, dubbing it as 'unworkable' and 'unenforceable'. Opponents to the law aired concerns related to economic loss of retailers, job losses, pub closures, and impacts on tourism. Despite these concerns, the smoke-free workplace legislation in Ireland was introduced in March 2004, as a health and safety measure focused on those exposed to a high level of SHS in the workplace, specifically those in the hospitality (bar and restaurant) industry. Ireland was the first country in the world to introduce a nation-wide ban on smoking in workplaces with only a few exceptions. The pressure group opposing the ban appears to have disbanded since the ban was imposed. Their disappearance was noted by the public health advocates; to be as a result of the success of the ban.

In 2005, Ireland was considered the leader in tobacco control as determined by the European Tobacco Control Scale, carried out by the World Health Organization (WHO). This scale examines six strategic policies described by the WHO under its *MPOWER* package (WHO, 2008) (*see p. 19 for details*). The 2007 survey ranked Ireland as 2nd overall for adhering to these important tobacco control measures. In the previous 2005 survey, Ireland was ranked in 1st place, but was overtaken by the UK in 2007 due to the UK increases in tobacco taxation and prices, investment in interventions and increased spending on public information campaigns. Critics of this [26] score, outline how the score ignores the cultural differentiation in acceptability of smoking and smoking policies. It has also ignored both public and political

views on tobacco control and how smokers' identities have changed with increasing tobacco control [26].

Since 2004, Ireland has been joined by a host of nations including Norway, Italy and New Zealand. In 2007, when England introduced legislation, the UK achieved a full ban on smoking since Scotland, Wales and Northern Ireland had previously introduced bans. Other countries that either completed, extended or started to adopt full or partial smoking bans in 2007 included Australia, Belgium, Bosnia Herzegovina, Canada, Chile, Denmark, Estonia, Finland, France, Germany, Special Administrative Regions of Hong Kong of the Peoples' Republic of China, Iceland, India, Israel, Kenya, Lithuania, Portugal, Singapore, Slovenia, Colombia, Djibouti, Guatemala, Mauritius, Panama, Turkey. Zambia implemented complete bans and Switzerland and the Netherlands implemented partial bans in 2008. Despite this progress, it was estimated that only 5.4% of world's population were covered by comprehensive smoke-free laws in 2008 [27]. Romania, Greece and Brazil have since introduced smoke-free laws in 2009 [28-29].

In Ireland, the smoke-free legislation was framed as a national environmental and occupational health intervention. The smoke-free legislation, as outlined above, was considered the only measure to ensure that workers and patrons of bars, nightclubs and restaurants were protected from the harmful effects of SHS exposure [21]. The legislation could be considered 'a healthy macro-policy' [30] by controlling the environmental hazard for all in Irish Society.

3. Epidemiological research approaches to evaluating smoke-free legislation

Health outcomes after introduction of smoke-free workplace legislation

Research on the actual health effects of smoking restriction and legislative bans was sparse before the introduction of Ireland's legislative ban in 2004. Most previous evidence was based on local, regional and specific workplace smoke-free policies.

As outlined above, many countries have followed Irelands lead in implementing comprehensive smoke-free workplace legislation [28]. Accompanying these implementations is an array of evidence supporting the health, economic and social consequences of smoke-free legislation.

There is now compelling evidence of the positive benefits of becoming smoke-free from all smoke-free jurisdictions. The most consistent and convincing evidence available today on positive health outcomes of smoke-free legislation is related to reductions in SHS exposure [31-35] and improvements in respiratory health in specific work groups [36-39]. Research from Ireland [34-35, 39], Norway [32], Sweden [38] and New York [31] provide consistent evidence that occupational exposure to SHS is reduced and respiratory symptoms improve among non-smokers after implementation of smoke-free workplace legislation. Encouraging evidence from California suggests that these reductions have been sustained 10 years post legislation [40]. Smoke-free legislation have also resulted in a significant reduction in the cardiovascular health burden [41-43].

Some evidence suggests that these legislation contribute to a reduction in prevalence of smoking and consumption among employees [1-3, 44]. However, this evidence is varied and comparisons between jurisdictions are difficult due to variation in policy/law coverage, length of study period, data collected, study participants etc.

Smoking prevalence in Ireland and Internationally

Tracking data from Ireland provided by the Office of Tobacco Control Ipsos MRBI Omnipoll [45] shows a 12 month moving average trend from June 2003 to April 2010. An overall decline in prevalence trends is evident over this period; 30% of males and 27% of females smoked in 2003, which dropped to 25% and 22% respectively in 2010. The introduction of the smoke-free legislation in March 2004 was followed soon after, by a decline in smoking prevalence especially among women. Contrary to this evidence from Ireland post legislation [45], Elton and Campbell [46] found no change in smoking prevalence among the general population in England. Galán [47] found a non-significant increase of prevalence in Spain, very soon after the implementation of the legislation. The decline in Ireland's prevalence was not sustained for long, after the introduction of the policy. Prevalence reached close to pre-ban levels, two years post-ban. However, trends from 2008 to 2010 present evidence of a steadier decline in prevalence for both males (25%) and females (22.2%). England also saw a steady reduction in overall prevalence rates from 2003 to 2008 of 4% (from 25% to 21%) [48]. Evidence suggests that Ireland is lagging behind England but the Irish general population demonstrated a steady decline in prevalence from 28% in 2003 to 23.6% in 2010.

Internationally some evidence exists for reductions in smoking prevalence among the general population as a whole [49] and among males specifically [41] post legislation (appendix 3, table 1). Hospitality workers were an occupational group most affected by smoke-free

legislation, thus, research among this group was common. Prevalence dropped by 4% among bar workers in Scotland [50] which is comparable to a drop of 3.6% among bar workers in Norway [3].

A population level study [51] included data from twenty-one countries, that involved the United States, Canadian provinces, Ireland and Scotland. This study concluded that smoke-free legislation increased the rate at which prevalence declined in some locations but most had no measureable impact on smoking prevalence. Lee *et al.*, also confirmed that declines in smoking prevalence were continuing on from pre-legislation trends and that they did not accelerate during the 18 months immediately following implementation echoing earlier results from Elton and Campbell [46] who found no change in prevalence among the general population in England.

From the data available to date, the effect of smoke-free legislation on smoking prevalence is inconclusive and perhaps most notable changes are localised to specific workplaces for which the legislation impacted most.

Smoking consumption

Consistent with previous evidence, smoke-free legislation are associated with a drop in cigarette consumption (appendix 3, table 1). The proportion of heavy smokers fell in England three months after the legislation (smokers smoking >20cig/day fell from 27.6 to 21.8% $P = 0.044$) [46] and among males in Italy (smokers smoking ≥ 20 cig/day fell from 5.1% - 4.3%; smokers smoking <20cig/day dropped from 29.8%-26.2%;) [41]. It is again evident that vulnerable occupational groups particularly benefit from smoke-free legislation. Hospitality workers in Spain (drop of 1.6 cigarettes/day, ($p < .01$) [52] and bar workers in Scotland (drop of 2.5 cig/day)[50] all consumed significantly fewer cigarettes per day post legislation. This evidence is also borne out qualitatively [53]. Evidence from England [48] described an overall mean reduction of 1 cigarette per day among smokers from 2003 to 2008, but suggest that this mean reduction was not impacted upon by the ban (results at 18 months post law) but was part of an overall trend. Research from 1997 warned that reductions in cigarette consumption among smokers frequently seen after implementation of a worksite smoking bans may diminish over time especially if a large drop is evident soon after the introduction of the policy [54]. However, this research referred to a workplace policy and not national legislation, which arguably could have more sustained impact on behaviour compared to localised policy. This hypothesis is supported to some extent in California where

consumption rates are declining and are lower in states with less tobacco control measures [40].

Quitting behaviour

Reflecting findings related to smoking prevalence, the data available on quitting behaviour were also inconsistent. Some research has pointed to an increase in quit attempts just before [55-56] or just after implementation [55, 57], some research details no overall difference in quit attempt or cessation [56, 58] or just reveals an increase in contemplation around quitting [59-61] (table 1, appendix 3).

A recent Cochrane review [62] on the impact of legislative bans on second-hand smoke exposure, smoking prevalence and tobacco consumption concluded that there was no consistent evidence of a reduction in smoking prevalence attributable to smoke-free legislation. The review also concluded that consumption was reduced in studies where prevalence declined. The review did include complete or partial bans and included national, regional or local level policy and legislation.

A number of factors may explain the differential effect of smoke-free legislation on smoking cessation behaviour including; the pre-existence of tobacco control measure and policies, the time period since implementation, if the law is comprehensive or not, the level of enforcement as well as cultural difference within smoke-free jurisdictions. Contradicting evidence demonstrates the complexities of evaluating such interventions. Hahn [63] and Bauer [64] summarised how smoke-free laws may have a delayed effect i.e.: that the longer a smoke-free law is in effect, the more likely adults will attempt and succeed in quitting smoking.

4. Social science approaches in the evaluation of smoke-free legislation

Smoke-free legislation and smoking behaviour

Smoking behaviour is largely part of a routine for a smoker but can vary throughout the life course as well as the day/night and weekday/weekend [65-66]. Throughout the smoking life course smoking behaviour changes as do the intentions, experiences and likelihood of quitting. Smoking as an everyday behaviour has an overall life course pattern from initiation to progression, maintenance, cessation and relapse [67]. The life course model describes the stages of smoking a smoker may be at or have gone through in his/her lifetime. This life

course coincides somewhat with age as some general trends typically occur at certain ages. For example, initiation typically occurs in adolescence, while patterns in cessation can be seen with life events like pregnancy and times of illness which are not necessarily determined by age.

Research has examined the positive influence peer smoking has on initiation rates among fellow non-smokers and the importance of smoking within groups [68]. Research has also suggested that children exposed to parental smoking are more likely to smoke themselves than children in non-smoking homes not only due to increased access to cigarettes but also the acceptability of smoking within the home [69].

A new and changing environment, such as the smoke-free workplace legislation, may have a more dramatic influence on some smokers than others. Within daily practices of smoking 'compensatory' smoking [70] may occur before an anticipated time of restriction (e.g. work) and for activities such as socialising or during times of stress, inactivity or boredom where typically more cigarettes are consumed [70]. The ban may increase the frequency of these periods of compensation or 'binge smoking'. During times of daily restrictions (e.g. work; cinema, plane) some smokers adjust and prepare for their next cigarette [71] pg188 others may compensate or 'tank up' before restrictions [70].

The smoke-free legislation could result in numerous responses by smokers and non-smokers. For smokers, the measure may be ignored or resisted [72] or smokers may retreat from the public realm [71] pg190. Alternatively the smokers may change by either quitting or altering their routine [65] and comply with the ban as 'good citizens' and smoke in a 'considerate' manner in designated areas. This altering of behaviours could occur through choice or because they have a sense of helplessness.

In Ireland, some smokers perceived that they would change their smoking behaviour because of the ban [73] while others may have anticipated change to their ability and opportunity to socialise therefore resulting in a change of behaviour. Irish smokers had previous experience of smoking restrictions from other smoke-free tobacco control measures, including most workplaces, cinemas, planes and hospitals. Therefore it could be argued that the introduction of this ban would not change behaviour, with smokers adjusting and responding by compensating before or after times of restriction. Although the ban was introduced into pubs as a health and safety measure, evidence of the effectiveness of smoke-free workplace

restrictions indicate that, through reduced opportunities to smoke and the ‘de-normalisation’ of smoking, prevalence and consumption rates would most likely drop [1, 3, 60, 74-79].

The stigmatisation through separation of those who continue to smoke may contribute to a perception of outsiders [80-81] and stereotyping of ‘others’ ([82] cited in [72]). A cost benefit analysis described by Nyborg [83] suggests that among smokers, the inconvenience cost; which may include leaving good company to smoke outside, getting cold outside in bad weather while smoking or the cost of reduced social approval may outweigh the benefits of smoking. A shift in behaviour may also be attributed to the introduction of the ban whereby previously ‘non-considerate’ smokers [83] consciously adjust their behaviour in both regulated (pub) and un-regulated areas (e.g. homes).

Irish pub culture - A ‘third place’ & smoking in the ‘third place’

The smoke-free legislation in Ireland is a policy focused on one of the few remaining public indoor spaces which lawfully allowed SHS exposure, namely pubs and restaurants. Ireland is well known for its ‘pub’ and ‘drink’ culture. The Irish pub is recognisable as a semi-public but highly regulated social space with its own codes of behaviour within which the clientele form a small society or community [83-84]. Traditionally drinking is a social act in these social spaces. Pubs may offer a real sense of community and everyday life providing a ‘third place’. Oldenburg [85] describes the third place as a location that is not work and not home; rather a public place where people can easily meet, relax and interact. While one of the defining features of the third place is that the pub is not ‘home’, the pub nevertheless express key aspects of a home such as informality, warmth and a sense of freedom to be. This idea of a third place is most likely fitting to a regular or local pub not a ‘super-pub’. Drinking patterns in Ireland have changed in recent years with increases in variety, availability and sales of alcohol outside of the pub (such as in supermarkets, petrol stations and off licences). These changes in drinking patterns are accompanied by changes in types of pubs. Pubs can now offer a wide range of activities and facilities; food, a wide range of beers, live music and other entertainment as well as children’s play areas [86]. Some adults may socialise in groups and go to a range of bars on an ad-hoc basis. Others may go to the same pubs; or the ‘local’ (third place).

As ‘regulars’ in a pub their behaviour is more likely to be part of a routine within these behavioural setting [87] or pubs may result in smokers smoking the same number of

cigarettes each time they go to the pub. Both the smoker and non-smoker may, due to their familiar surroundings, feel 'comfortable' either left alone within the pub or outside smoking. The 'super-pub', whose primary customer base is young adults, is more likely to provide comfortable smoking areas than smaller 'local' pubs. Due to comfort, these new smoking areas may promote socialising whereby people spend longer periods of time in these areas and possibly smoke more (or rates close to those smoked in the pub pre-law). Smoking areas can become an extension of the pub itself; not just a facility for the sole purpose of smoking. These new spaces may also change where smokers can drink and interact with others. Poland [71] describes how smoking can act as a 'social lubricant; a cigarette or a light offered or accepted serves to break the ice' and may lead to this idea of flirting and smoking (smirting). The new legislation could present different behavioural adjustments for different groups/subsets of smokers and non-smokers. Increase in the use of these new spaces among clients of certain bars may demonstrate a rebellion against this public health policy; with non-smokers frequenting the smoking room with the smoker.

The introduction of the smoke-free workplace legislation was predicted to create a new pub culture within Ireland. Possible negative outcomes such as lost of business, fewer people visiting pubs [73] and 'spoilt atmosphere' where smokers and non-smokers would socialise separately were predicted. In anticipation of the ban publicans had to adapt their premises, where possible, to provide facilities for smokers. In cases where the pub could not be adapted smokers had to leave the bar to smoke (usually outside to either the front or back of pub). Smokers had, in most cases, to adapt their behaviour when socialising by going to these designated areas. At a behavioural level, it is possible that having to smoke at these designated areas could modify the amount smokers smoked, cause compensatory smoking or even quitting. Within this social context; new cultures of smoking may have emerged, particularly while socialising in pubs. A variety of possibilities exists in relation to changes in new cultures within the pub. Firstly, as Goffman observes, the stigmatised may seek each other out and form 'shamed groups' or groups with a common stigma [88]. Secondly, as Farrimond & Joffe's [89] describes, non-smokers may perceive benefits of being in the 'smokers club' such as opportunities for bonding within these groups or an opportunity to interact with strangers (smirting). 'The 'squeezing out' of smoking from the public sphere reflects the relationship between the space allocated to smokers, its relative value or its desirability in terms of location or comfort and the social desirability of smoking given space is tantamount to granting legitimacy [90].

Other external factors may also influence smoker's behaviour within personal (home, car) and public spaces including pubs. Inmates (family [68, 91] and friends [92]) reactions, according to Goffman, can be more shaming than the public reaction (injunctive norms (Cialdini *et al.*, 1991 cited in [93]) to the behaviour and may result in concealed behaviour or secret smoking [71, 89]. The social disapproval of smoking is highly gendered, with pregnant women being amongst the most demonised and disparaged smokers. The smoke-free workplace legislation may also create different negative situations for women and men; women may feel intimidated or at risk while in the smoking area of a pub on her own (as non-smoker or smoker) or in the company of strangers. It has been argued that social factors, in this case the ban and the accompanying social unacceptability of smoking, may be more influential on women's smoking behaviour than on men [94] and that women who smoke are more responsive than men to negative environmental factors [95] such as SHS. Although differential behavioural and social responses will be more likely for women than for men and for different socioeconomic groups [82, 89], I do not intend to examine the specific different gender or class issues related to the ban within this thesis.

Changing Smoking Culture

Research shows that smokers and non-smokers have different perceptions of the immediate and long-term health consequences of smoking and SHS. The ban, in conjunction with other tobacco control measures (including prohibition of the sale of 10 packs of cigarettes and point of sale advertising), may lead to a possible de-normalisation, decreased social desirability [96] or stigmatisation of smokers and their smoking. 'De-normalisation' primarily focuses, in an Irish context, on the hazardous nature of tobacco products, and the health, social and economic burden resulting from the use of tobacco. The tobacco control advocates refer to the positive health outcomes of such 'de-normalisation' noting possible drops in initiation rates, increase cessation rates and decreases in the amount smoked by smokers in the future. This 'de-normalisation' may also lead, perhaps unintentionally, to stigmatisation of the smoker; negative feeling and thoughts towards smokers and internalised feelings of guilt and shame, as markers of stigmatisation [71] among smokers, resulting in the moving of smoking from the public (in public view) to the private sphere (private spaces; secret) or privatisation of smoking. This privatisation can be intensified; if smoking becomes more of an individual rather than a social practice. The privatisation may result in more people smoking in the home, cars or in secret.

The socially and economically disadvantaged classes, who have higher smoking prevalence, are less likely to quit and are therefore most at risk of smoking related morbidity and mortality. Those in society with the highest smoking prevalence may be the group most affected by the introduction of the ban either positively or negatively. Poland ([71] pg 193) discusses the possible reliance of marginalised groups on public spaces in comparison to those with more material wealth, therefore, the restrictions posed by the ban may result in 'compounding layers of stigmatisation' [72] among the marginalised. As smoking can be seen as a coping mechanism for daily life, dealing with illness or death, caring for others [67, 97] and an opportunity to relax the ban may be counter-productive by limiting the opportunities for smoking. Feelings of social isolation from the wider community may also be embedded.

It could be argued that with the introduction of a legislative ban and the regulation of the 'risk' and 'danger' [90, 98-99] posed by SHS, the government is infringing on an individual's human rights to consume commodities, such as cigarettes, when and wherever chosen. This suggests that the smoking ban contributes to the creation of individuals as targets of social exclusion [90, 98-99]. Thomson mentions McDowell's belief that recent health campaigns emit 'cultural condescension' and 'moral disapproval' to convince working class smokers to quit smoking [72]. This argument is strongly contested by Tobacco Control advocates emphasising that the scientific evidence of harmful effects of SHS to others in society far outweigh any alleged injustice towards smokers.

Smoking is no longer a convivial and integral part of everyday life. In large part, it has become an activity largely removed from routine human interaction [26]. Goffman's [88] classic analysis of stigma and its resultant "spoiled identity" could be consistent with how the meaning of smoking has changed in the Irish context since the ban. Goffman described stigmatisation as the transformation "from a whole and usual person to a tainted, discounted one".

Intensification of stigmatisation in Irish smoking culture

Stigmatisation of smoking can work at the individual, group (Goffman 1963 cited in [72]), and societal level. Stigmatisation of smoking has been largely individual to date in Ireland with campaigns for smoking cessation targeting individual behaviours removed from any social meaning or context [100]. The responsibility of the smoker to conform can be seen as 'individual' [100]. However social interaction at work [65], within groups [68] and

communities [101] are also important in understanding smoking behaviours. Due to the importance placed on the 'pub' as a site of socialising in Ireland any impact of the ban on behaviour from an Irish perspective has to be conceptualised as a social behaviour as well as an individual behaviour.

The ban now presents an individual act influenced by group dynamics where smokers, as a collective group, need to act individually as responsible citizens [102] and 'abide' by this law for the good of all society. Individuals make decisions by judging what appropriate behaviour is and adjusting it accordingly; to the social norms of their current environment. This self surveillance (described by Foucault) is influenced by the possibility of their actions being surveyed and judged by others.

Chapman and Freeman [26] offer "a starting point" for researchers to qualitatively investigate the cultural consequences of tobacco control policies. I used Chapman and Freeman's writings, as well as Thompson's work as a starting point for our qualitative work.

5. My Research approach

Epistemological approach: Mixed methods approach

I will use mixed methods within a public health framework and combine epidemiological quantitative research with a social science informed qualitative approach.

Qualitative versus quantitative

Although researchers using quantitative and qualitative research paradigms acknowledge the value of both perspectives, they regularly debate on research quality issues such as objectivity, generalisability, validity, reproducibility, bias etc. Cojocaru [103] and others [104-107] outline the main disputes and challenges of using mixed methods. They explain where advocates of quantitative research (who are opponents to qualitative) might say its own field is objective and independent of the researcher – therefore real social outcomes can be determined reliably and validly and reality is something that can be studied objectively. Quantitative results can be generalised, are representative and are credible while they may argue that qualitative research is subjective, based on multiply realities, is individualistic and is context driven. In qualitative work, researchers acknowledge that multiple realities exist in any given situation - the researchers, those of the individuals being investigated, and the reader or audience interpreting the results. The researcher aims to interact with all participants and actively works to minimize the distance between the researcher and those

being researched. Qualitative research is context-bound, and claim that context-free generalisations are neither desirable nor possible [104].

Mixed methods approach is philosophically rooted in pragmatism [104-107] which takes an explicitly value-oriented approach to research. Mixed methods are embraced by many fields of research today. Johnson & Onwuegbuzie [104] presents 'the third research paradigm' and discuss the goal of mixed methods research as not replacing either approach but rather to draw from the strength and minimise the weaknesses of both [104-107]. It aims to select the method or philosophical approach which best suits the issue under scrutiny or question to be answered. The authors discuss similarities between the research approaches, including how researchers ask questions and control for bias. They query the subjectivity of any research and question how quantitative can be 'purely' objective when decisions and preferences are needed in terms of study design, choosing measurement tools and deciding what constitutes publishable data in their field. Similarly, strong personal beliefs inevitably influence qualitative researchers approach and interpretation, and potentially hinder the interpretation of the multiple realities of their research. Regardless of approach it is difficult to avoid the influence of values in all inquiries.

Quantitative research can be criticised as one-dimensional and simplistic in its assessment of the impact of a policy such as the smoke-free legislation and qualitative research can be criticised as providing subjective data. My strategy in this PhD thesis was to determine the wider impacts of the smoke-free legislation and provide a holistic view of behaviour and societal change by complimenting and expanding upon the quantitative behaviour change and risk perception estimates with qualitative research.

Within my research, I used a sequential strategy, using quantitative, then qualitative methods. This sequence was partly used for logistical reasons, the quantitative work started immediately before the introduction of the legislation and for comparability purposes needed to be completed within the same time-frame one and two years post legislation. The decision to complete the qualitative work after the follow-up studies also allowed for more time to reflect and prepare for this research and offered the opportunity to add some deeper understanding to the quantitative results.

Quantitative approach

First I took a population health perspective addressing prevalence, prevalence changes and risk perception changes using a quantitative approach. The population health method relies on the creation of data that is generalisable, that rule out alternative explanations for the observed differences and that goes beyond the individual. The data used was considered fairly representative for the respective target population and efforts were made to adjust for potential bias and confounding with the view to providing results that could be applied to the Irish general population, and could also inform other jurisdictions considering smoke-free legislation. Using a large sample size is important in terms of public health since the data generated through analysis and research of this sample can be used to assess relative changes in outcomes after such an intervention. Analysis of large sample sizes also allow generation of data that can be used to identify health service needs contribute to public expenditure planning and may be easy to communicate to the general population. In terms of potential agenda, papers 1 and 2 were intended to support policy implementation and to assist in creating a body of evidence to persuade international governments to implement similar policies.

Qualitative approach

The quantitative approach used in this thesis was in some sense limited, since prevalence and consumption are only general estimates of outcome. The findings based on quantitative methods used could not explain what mechanisms existed behind the prevalence and risk perception changes. Nor did they indicate the potential factors responsible for the unsustained prevalence changes. Although the legislation was applauded as successful in terms of reduction in prevalence and sustained reductions in consumption rates, ethical issues arose related to intensification of smoker stigma. Concerns also existed around social injustice and social inequalities and it was felt by the research team that smokers' views needed to be taken into consideration when assessing the impacts of the legislation.

A qualitative method was chosen; as it is appropriate to help understand social phenomena in natural settings with emphasis placed on the meanings, experiences, and views of the participants. Qualitative methods examine the subjective experiences of individuals and help to understand emerging trends in society [108]. I used an interpretative methodology as it centres on the ways in which humans make sense of their subjective reality and attach meaning to it [109]. The qualitative research evolved over the term of the project and provided the main opportunity for flexibility in terms of research questions and was the

component of this thesis likely to be most influenced by my and the teams beliefs, values, bias and agenda.

I decided to direct my research away from services-providers to a user (of smoking areas) perspective on smoke-free legislation. Therefore, I decided against including bar workers in our qualitative sample. Bar workers are a specific occupational group with potentially specific issues to the law. Our intention was not to provide an occupational perspective but a more holistic view of the social consequences of the legislation.

The qualitative analysis explored issues around stigmatisation and changes in pub culture which would be challenging to measure in a quantitative manner and were therefore not captured within the quantitative work. The interviews also attempted to gain an insight into the factors driving smoking behavioural change; which were seen among the quantitative results and contributed to an explanation for the initial decrease and then increase to pre-ban rates in smoking trends nationally. The qualitative analysis explored the potential for the smoke-free legislation to intensify stigma for smoking behaviour. Although components or identifiers of stigmatisation (shame, guilt, regret, uncomfortable, normal, outsider) could be sought through questionnaires, the context of the evolving nature of stigma would be missed, and it would be difficult to differentiate stigma as a consequence of the law in pubs verses other sources. It would also have been likely that only smokers would be asked these identifiers by a questionnaire, and therefore the uniqueness of and importance of non-smokers in the interpretation of the social implications of the law would have been missed. This qualitative work provides some depth to the possible mechanisms of how the smoke-free legislation filtered down into behaviours and perceptions.

Mixed Methods - A multi-disciplinary approach

Public health problems result from complex social, economic, political, biological, genetic and environmental causes. A range of methods are needed to tackle or assess these and public health researchers are considered most effective when they are eclectic in their choice of methods [110].

Taking a mixed methods approach allows researchers to mix and match design components that offer the best chance of answering their specific research questions. The ideal mixed research involves a cyclical, recursive, and interactional process [104]. If findings from (purely) mixed methods research are corroborated across different approaches, then greater confidence can be held in the singular conclusion. If the findings conflict, then the researcher has greater knowledge and can modify interpretations and conclusions accordingly. In many

cases, the goal of mixing is not to search for corroboration; but rather to expand understanding of a topic.

I used qualitative methods to expand, complement and develop the quantitative research findings. Although not all the papers included in this PhD thesis followed a strict mixed methods approach, the overall thesis was guided by the ‘third paradigm’. This research was cyclical as the findings on prevalence changes, improvements in risk perception and fieldwork experiences all feed into the qualitative design. The PhD papers overall were not used for triangulation (i.e. seeking convergence and corroboration of results from different methods and designs studying the same phenomenon); but instead the qualitative paper was complementary, it sought to elaborate, enhance, illustrate, and clarify some results from the quantitative studies.

Personal Reflection

Owing to my studies in health promotion, and particularly in the areas of public health and sociology, I believe I have developed an empathetic understanding of potential and perceived social injustice arising from implementation of smoke-free regulation. This and my personal experiences with knowing smokers translated to sympathy and understanding of the social ethics around smoking. I genuinely had no prejudice towards smokers and was impartial to the implementation of the ban pre-ban.

Through my research I have developed an understanding, and as a result, a certain empathy towards smokers, the social pressures to start smoking, the addictive nature of smoking, the difficulty to quit and the potential hazards and inconvenience of the smoke-free legislation. This may have had a limited influence on the interpretation and writing of the quantitative papers as I believe the papers are restricted in interpretation, but it did seem to assist in achieving a good response rate among bar workers.

Conversely, the qualitative research was, as expected, more influenced by my personal view (and that of the research group and ethos of the research project) that smoking is socially driven and socially determined and that the social determinants of health and health inequalities are critical to the understanding of smoking behaviour.

My training in Health Promotion helped me develop an appreciation for mixed methods and the importance of appropriate study design informed by the research question and circumstances; and not completely determined by methods. This education has increased my awareness of the influence of policy (macro level), in combination with a host of factors, including socioeconomic status (SES), income, education, social support and family

influences that can potentially have an effect on individual attitudes and behaviour. The estimates within this thesis do provide a good overview of what the situation is in Ireland, in relation to smoking. These data are analysed acknowledging the important influences SES, age and gender have on smoking patterns and on risk perception in general. I have developed an appreciation of their contribution in the interpretation of behaviour and knowledge changes overtime. My previous qualifications have also afforded me an understanding of the limitations quantitative research can bring to this research particularly on a macro level intervention such as the smoke-free legislation. Prevalence trends are a crude indicator of changes in smoking patterns. From a tobacco control perspective prevalence changes (drop) are welcomed, however this crude measure can sometimes ignore the importance of SES factors in explaining these changes. This information is important to enlighten further attempts to reduce prevalence, in programme delivery and allocation of resources in tobacco control.

In approaching this research with a pragmatic lens and embracing mixed methods; I believe I have produced an interesting perspective on the smoke-free legislation. An appreciation and understanding of a mixture of research methods enabled me to be flexible in my investigative techniques, it provided me with experience in both qualitative and quantitative methods and analysis and I believe provided a micro and macro level investigation into a macro level public policy. The application of mixed methods has also afforded me the opportunity to collaborate with a number of researchers, regardless of their philosophical orientation. This also highlighted to me that collaboration across disciplines can make a significant contribution to the solving of public health issues.

Behaviour change models and theories

Individual behaviour models and theories could apply to different aspects of this thesis including the Health Belief Model [111], Trans-theoretical Model [112], Theory of Reasoned Action [113] and Theory of Planned Behaviour [113]. Although some of these models address social factors, they are based at the individual level, and are not broad enough to interpret social factors. The psychological Health Belief Model could fit well in the understanding and interpretation of the risk perception aspect of this thesis. Risk perception of second-hand smoke exposure at an individual level could be theorised in terms of perceived threats, susceptibility, severity, benefits and barriers etc. However, the limitation of focusing on the individual behaviour in this way disregards the existence of determinants known to be important in fully appreciating smoking behaviour. This model makes no

reference to social norms, peer influence, economic or environmental factors. Another psychological model commonly used in Health Promotion for smoking cessation is the Trans-theoretical Model (Stages of Change), but again this focuses on the individual without assessing the role that structural and environmental issues may have on a person's ability to enact behavioural change or even pre-contemplate the behavioural change.

This thesis is based on population level research; it is mostly quantitative and comes from a public health perspective with a social epidemiological approach. Considering the limitations of quantitative research methods as a stand-alone method in the evaluation of the legislation the quantitative results were used to inform a qualitative element within this work. This qualitative element was strongly influenced by the Social Sciences. The models and theories mentioned above although useful at the individual level are not application to my work which is largely focused at the population level. Socio-ecological models are therefore considered more appropriate at the population level as they attempt to encapsulate the multitude of factors or determinants involved in behaviour.

Ecological model of behaviour change

Socio-ecological models or ecological models (terms are interchangeably) of social behaviour change describe the relationship between health behaviour and interpersonal, organisational, community and social subsystems, the models can be applied at the individual and population level. The core concept of an ecological model is that behaviour has multiple levels of influences, often including intrapersonal (biological, psychological), interpersonal (social, cultural), organisational, community, physical environmental, and policy. The philosophical underpinning of the concept is that behaviour does not occur within a vacuum [114-117].

Ecological models help articulate the complexities of health determinants and the environmental and societal influences on health. Ecological models of health behaviour emphasize the environmental and policy contexts of behaviour, while incorporating social and psychological influences.

The potential strengths of this approach are that the affects virtually reach entire populations, in contrast to interventions that reach only individuals who choose to participate. The policy and environmental interventions such as the smoke-free legislation establish settings and incentives that can persist overtime. One obstacle considered important to the longevity of the smoke-free legislation was enforcement; however post-legislation saw compliance rates of 98% (Office of Tobacco Control). Another key strength of ecological models is they focus on multiple levels of influence on behaviour that broadens options for interventions and evaluations –this is important as behaviour change is complex and change is not immediate.

Providing individuals with motivation and skills to change behaviour cannot be effective if environments and policies make it difficult or impossible to choose healthy behaviours. Rather, what ecological approaches aim to do is create environments and policies that make it convenient, attractive, and economical to make healthy choices, and then motivate and educate people about those choices [118].

However these models also present a major challenge for those working to achieve these goals including challenges in development of more sophisticated operational models that lead to testable short-term hypotheses and useful guidance for future interventions [118]. It may also be difficult to prove effectiveness of individual elements of a multi-faceted intervention or policy due to the potentially large range of variables affected- thus effecting funding. Also establishing change at the environmental or political level is time consuming and requires innovative thinking, advocacy skills and partnership among interested groups.

There are a diverse range of ecological models to choose from, some specifically designed for particular behaviours and fields of research.

Huisman [116], Ritchie (Scotland ban [53]) and Elder [117] are examples of how these models could apply to smoking behaviour. However, since McLaren & Hawe [115] is a commonly used ecological model for behaviour change; I will use this as a reference in this instance. McLaren & Hawe [115] outline the existence of different levels of influence (example from a smoking/tobacco control perspective), including the intrapersonal realm (rebelliousness), interpersonal processes (peer pressure, parental influences, socioeconomic status), organisational processes (school, workplace), community (local smoking cessation groups, social norms, standards of smoking areas, accessibility), and public policy (taxation, smoke-free legislation, advertising bans, enforcement of legal age). Their definition also highlights notions of multilevel interventions and evaluation, interaction between the levels, reciprocal causation, as well as the need for environmental change and individual support for these changes. In theory, behaviour change is expected to be maximised when environments and policies support healthful choices, when social norms and social support for healthful choices are strong, and when individuals are motivated and educated to make those choices [115].

An underlying objective of the ecological model would be to use both individual-level and environmental/policy-level interventions to achieve substantial changes in health behaviours. Tobacco control internationally has acknowledged the importance of approaches that can systematically target mechanisms of change at several levels for many years and this

approach is endorsed by the FCTC. The combination of a number of tobacco control strategies is credited with the major reductions in tobacco use in the United States since the 1960s, and this experience has stimulated the application of multi-level models and interventions to many health problems.

The smoke-free legislation in Ireland was introduced as health and safety measure, but unintentional consequences may include reduced smoking prevalence rates, increases in awareness of risks posed by second-hand smoke and increased de-normalisation and stigmatisation of smokers and their smoking behaviour. Increases in cigarette taxes were called for by tobacco control advocates soon after the legislation passed as tax increases were seen as an ideal supplementary component to the legislation and a further incentive for smokers to quit. This tax increase was determined to be unjust for smokers and a move that was considered unfavourable for politicians. The smoke-free legislation was accompanied by other individually based approaches to smoking cessation, including an increase in advertisement of smoking cessation services such as the national smokers' quit-line (Irish Cancer Society) and an increased media attention on the health consequences of active and passive smoking. However, the smoke-free legislation was largely a policy level macro-level intervention.

Determinants of Health (Dahlgren and Whitehead 1991) as the overarching conceptual frame work

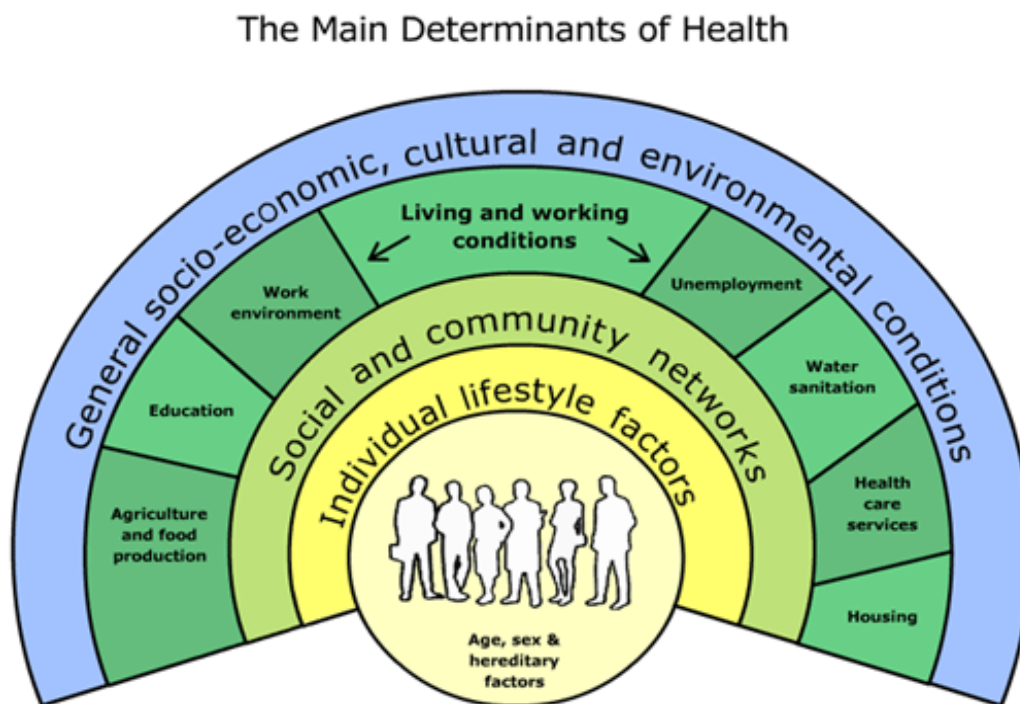
Lifestyles are important determinants of health. But it is factors in the social environment that determine access to health services and influence lifestyle choices in the first place."

WHO Director-General Dr Margaret Chan

The Dahlgren and Whitehead model or rainbow (Figure 1) of the determinants of health (DOH) is utilised as a conceptual framework and the public health context for this thesis. The framework is based on the principles of the socio-ecological models discussed earlier. The Dahlgren and Whitehead model is widely utilised in Public Health to explain potential casual relationships between a) biological factors; which are largely pre-determined and uncontrollable, b) modifiable individual lifestyle factors such as smoking and c) structural factors such as social and community influences, d) living and working conditions, and e) general socio-economic and environmental conditions. The rainbow does not specify the causal pathways between different layers and segments of the rainbow but could be seen as stimulating thinking and research on how these determinants operate alone and in

combination. The framework looks beyond individual lifestyle factors and emphasises the inter-relationship between the determinants and how they cannot be understood in isolation from the others [119].

Figure 1 Dahlgren and Whitehead Model (1991)



The structural factors that impact health are beyond any individual's ability to change. Most determinants; except biological factors, are said to be fundamentally shaped and influenced by, collective societal choices embodied in social policies, regulatory and legislative frameworks; by the broader determinants of health.

This model can facilitate the understanding of the determinants of smoking in the context of social inequalities in health. Health inequalities are considered to be caused by the unequal distribution of health determinants between people from different levels of the social hierarchy. Although it is difficult to demonstrate that any one determinant is the primary cause of a health outcome, much evidence exists on possible casual links for the co-existence of multiple determinants and their role on ill health. Much research on health inequalities points to relationships between a combination of several determinants and poor health, for example; low pay, stressful and dangerous work conditions and an increase of risky behaviours with an outcome of increased rates of illness including coronary heart disease (CHD), cancer and poor mental health compared to those not experiencing these negative determinants [120-121]. Many health risk factors, including unfavourable living and working

conditions, psychosocial factors, and health behaviours such as smoking, inadequate diet, excessive alcohol consumption, and lack of physical exercise are more frequent in lower socioeconomic groups, and have been shown to contribute to the explanation of health inequalities [122]. Socioeconomic inequalities in health usually present themselves as a gradient, characterised by a gradual but systematic increase of the rates of morbidity and mortality as one moves down the social ladder.

Health Inequalities and Smoking Prevalence

Smoking has been shown to be a major contributor to social inequalities in mortality. Smoking accounts for approximately 30% of socioeconomic inequalities in mortality and approximately 15% of socioeconomic inequalities in morbidity among men in many European populations [123]. For women, the contribution of smoking to socioeconomic inequalities in mortality is much more variable.

Smoking is the single greatest contributor to preventable illness and premature death in Ireland [124]. Despite the decreasing death rates from CHD and stroke in Ireland as in many European populations, there is concern about the widening gap in mortality and morbidity between the managerial and professional social classes, and those with lower levels of education and on lower incomes [125]. According to Layte [126], measures of disadvantage and deprivation account for almost one-third of this class differential in smoking. This widening gap may be accounted for by the difference in smoking rates and other health related choices between the social classes.

As is evident from other developed countries, Ireland [127] has seen an overall reduction in recent years in the number of smokers: from 1999-2003; males: 32%- 28%, females: 31%-26% respectively. No significant changes in smoking rates were evident between 2002 and 2007. This overall decrease is not evident across all sectors of society; social class 5-6 (lower social class) have the highest prevalence of smoking for both males and females [127] and are less likely than those from higher socio-economic groups to quit smoking [127].

Existence of differential social class responses to population level tobacco control interventions, specifically smoke-free workplaces, is unclear. Thomas *et al.*, [128] found no strong evidence that smoking restrictions in workplaces and public places are more effective among more advantaged groups. Richie *et al.*, [53] present narratives of smokers from

disadvantaged communities who report greater decreases in consumption, compared to those smokers from affluent localities.

Recent years have seen a shift in emphasis in tobacco control advocacy from one that warns smokers of the personal health risk related to active smoking to campaigns emphasising 'greater public good'. Campaigns aimed at active smoking are considered to strengthen individuals through, for example, increasing their knowledge about health effects of smoking with the hope of increasing their likelihood of quitting or reducing cigarette consumption. This form of public health campaigning can be criticised as paternalistic. Tobacco control protagonists have developed measures aimed at 'the greater good' including smoke-free workplace legislation where the general public and particularly non-smokers are protected from the health risks associated with SHS exposure.

Smoking behaviour and the smoke-free legislation within the Dahlgren and Whitehead model

I will draw on the Dahlgren and Whitehead model to examine the extent to which smoking behaviour is shaped by the smoke-free workplace legislation. This thesis examines the implications of the legislation for both smokers and non-smokers.

Before exploring how the legislation may have impacted on the determinants of smoking behaviour, I will firstly give a brief overview of research related to the determinants of smoking behaviour. I will then look specifically at some determinants relevant to the smoke-free legislation namely, smoking prevalence, risk perception of SHS, stigmatisation of smokers and of their smoking behaviour.

Determinants of smoking behaviour

Below are some possible pathways in which the determinants of smoking behaviour can be explored through the lens of the Dahlgren and Whitehead framework.

Cigarette smoking contains nicotine which is addictive; however smoking is also a choice. This choice is made in a social and economic context that has a large bearing on the incentives to initiate, sustain and quit the behaviour and has a bearing on the perception of health risk associated with the behaviour.

Individual factors

The roles of biological pathways in smoking behaviour are unclear. Gender and age are important social factors (rather than biological issues) in relation to smoking behaviour. There is a large body of evidence examining the two main life stages of smoking behaviour; initiation and cessation. Smoking initiation classically occurs in adolescence. Males and females can respond differently to different smoking cues; adverse childhood events were found to be related to initiation among women but not men, while peer pressure was found to be related to smoking initiation among men [129]. Within the life course of smoking quitting can occur in older, married people and those with a higher SES [129]. There is a higher prevalence of smoking among men compared to women; however in western societies this trend is beginning to change with prevalence of smoking among women surpassing men. Men consume more cigarettes per day than women and are more likely to quit than women. Personal traits or personal resources are also considered important in smoking initiation and cessation including self efficacy, self esteem and neuroticism. Smoking can be used as a coping mechanism to regulate mood, manage stress, and cope with mental strain; these issues may originate within the living and working environment but be expressed here. Issues related to smoking cessation include weight gain, cigarette withdrawals and illness as a result of smoking.

Individual lifestyle factors

Smoking is considered a risk taking behaviour. Smoking can also be associated with other risky behaviour or unhealthy lifestyle practices such as lack of physical activity, alcohol consumption, taking illicit drugs and deliberate self-harm.

Social and community networks

Smoking initiation classically occurs in adolescence and can be influenced by many factors such as social pressure; including peers and family norms, cigarette prices, advertising and promotion and access. The continuation of smoking and the potential for cessation can also be influenced by social supports such as family, friends, children, work colleagues as well as social norms in the workplace and within the broader community.

Living and working conditions

The WHO Framework Convention on Tobacco Control (FCTC) is a regulatory strategy to combat tobacco globally. The FCTC recommendations relevant to this layer of the

framework include; demand reduction measures concerning tobacco dependence and cessation, education, communication, training and public awareness.

Health education can refer to active and passive smoking, prevention of initiation and increase of cessation rates. Education is considered a stronger indicator of smoking prevalence than income [126]. Employment status is a common indicator of social class. Unemployment can be associated with higher smoking prevalence and reduced intention to quit. Job demands, job control and stress experienced within the workplace can be associated with smoking behaviour e.g. some evidence suggests that low job control was associated with higher smoking prevalence among men.

The provision of smoke-free workplaces, smoke-free homes, smoke-free cars and standards of smoking areas provided for smokers is also relevant. The provisions of accessible, adequate and appropriate health care services are also understood within this layer. In relation to smoking, these can include access to smoking cessation services (NRT, Brief interventions, National Smokers Quitline etc.) with age, gender and social class appropriate and novel approaches to cessation. Training of key health professionals and gate keepers such as GPs and practice nurses in society as well as tobacco education in schools, workplaces and communities is also applicable within this layer.

General socio-economic and environmental conditions

The majority of the provisions in the WHO FCTC operate through this layer of the Dahlgren and Whitehead model. The convention outlines demand and supply reduction strategies. Demand reduction tactics include price and tax measures, and non-price related strategies including protection from exposure to tobacco smoke, regulation of the contents of tobacco products, regulation of tobacco product disclosures, packaging and labelling of tobacco products, tobacco advertising, promotion and sponsorship. The treaty also recommends supply reduction provisions including guidelines on illicit trade and sales to and by minors. All of these recommendations can be addressed through guidelines, policy and legislation. Increases in taxation on cigarettes, restriction of availability of cigarettes sales to and by minors, restrictions on promotion and advertising, and smoke-free policy have been shown to influence initiation, reduction in the cigarettes consumed and cessation rates.

The smoke-free workplace legislation and its impact on smoking prevalence, risk perception and stigmatisation

Here I will outline how the smoke-free workplace legislation may have impacted upon smoking prevalence, risk perception of SHS, stigmatisation of smokers and their behaviour; through the lens of the Dahlgren and Whitehead conceptualisation of the determinants of health.

The legislation may be viewed using the Dahlgren and Whitehead conceptual framework as having two entry points: however, I propose that there are rippling effects throughout determinants at different layers. One entry point for the legislation can be conceptualised within the general socioeconomic, cultural and environmental conditions (outer most layer) as this is a health-related legislation. A second entry point may be within improvements in living and working conditions (physical work environment) as the legislation specifies the removal of SHS exposure from all indoor workplaces including pubs and restaurants.

The potential rippling effects

- Restrictions in the places to smoke can be used as a mechanism to de-normalise smoking behaviour by moving it away from the public realm. This de-normalisation, although originating within the legislation, may be expressed within social networks (social and community networks) and working environments. Making smoking behaviour ‘less normal’ may assist in preventing initiation or trigger cessation. This de-normalisation may also contribute to stigmatisation of smokers and of smoking behaviour – thus further exiling disadvantaged groups.
- Smoking was not banned altogether, but banned in all enclosed workplaces including pubs and restaurants. Smokers needed somewhere to smoke in pubs so publicans created smoking areas (living and working conditions). Some smoking areas are functional and provided a legal space to smoke and possibly some shelter from the rain while others provided a ‘pub away from the pub’ with seats, heating, music and alcohol. Again a ripple may be evident here whereby the legislation impacted on social facilities for smokers and non-smokers (living and work conditions) which then impacts on social norms around smoking practices or social pressures to not smoke (e.g. when a smoker needs to leave the social group to have a cigarette outside). Consequently this could impact on the individual lifestyle factor of smoking behaviour by reducing the number of cigarettes consumed. Gender and age may also be factors to consider, whereby women may react differently to men in certain situations; for example a woman might feel uncomfortable being alone in a

smoking room and therefore smoke less. The standard of a smoking area may encourage or discourage smoking among different age groups; for example super pubs, which are targeting young adult customers, usually have state of the art smoking areas which perhaps glamorise and encourage smoking.

- The rationale for discussions about the introduction of a smoke-free legislation may have been to convince the public of the ‘sound’ evidence around health risks associated with SHS exposure, and gain support for its introduction which could potentially improve health education (living and working conditions). This may filter down into the community and social networks through family, friends, peers and social/cultural norms. The heightened awareness of risk associated with SHS exposure may result in a new cultural norm around SHS exposure and what is acceptable in a community. For example, social norms and social pressures may prevent smoking initiation or alter where and when a smoker smokes. This new knowledge, or reinforcement of existing knowledge, may initiate a quit attempt or prevent smoking initiation. This new social culture may also have adverse effects and create stigmatisation among smokers.

It is important to note, at this point, that the smoke-free legislation was introduced into a country with its own unique culture and a society with a long tobacco control history. Many tobacco control measure preceded its introduction. Therefore the impact of the Irish legislation is in some ways specific and the impacts on the following determinants may be more exaggerated in countries with fewer tobacco control measures.

Smoking behaviour

From a tobacco control perspective, the Irish smoke-free legislation may be considered a mechanism for reducing active smoking prevalence and consumption rates in the wider population through reduced opportunities to smoke and the possible increased de-normalisation of smoking. While the smoke-free workplace legislation brought about the physical removal of SHS as a potential prompt for smokers to smoke (SHS as reminder to smoke) from bars and restaurants, it also moved the opportunities for smoking and changed its social context. These factors could potentially have a knock-on effect on smokers and their consumption patterns. Alternatively the introduction of the legislation may have resulted in sustained or even increased smoking rates, in at-risk populations with already high smoking prevalence, due to the creation of and strengthening of social support networks (social and community networks) among smokers, and the demand for acceptable smoking areas being met by publicans.

Risk perception

The introduction of the ban and the health campaigns surrounding its introduction may have resulted in a change in health literacy related to smoking and thereby possibly influencing smoking behaviour. This thesis specifically investigates smoking risk perception. Although the Dahlgren and Whitehead framework does not make any reference to risk perception or risk knowledge, knowledge can be linked with the determinant ‘education’ and ‘health literacy’. Health literacy is seen as the wide range of ‘skills, and competencies that people develop over their lifetime to seek out, comprehend, evaluate, and use health information and concepts to make informed choices, reduce health risks, and increase quality of life’ [130]. Research has now shown that level of education is the best predictor of better knowledge about the risks of smoking [126, 131] and that better knowledge is associated with a lower likelihood of smoking initiation [132] and a higher rate of cessation [133].

The mass media campaigns related to the ban which referenced the health risks associated with SHS exposure may have had an effect on self-efficacy and thus ‘strengthening individuals’ or smokers to quit or reduce consumption. It is however possible, that the medium used to convey these messages may not have targeted those with the highest smoking prevalence or those with the highest SHS exposure (mostly people with a lower SES).

Knowledge may also be acquired and norms relating to smoking practices formed within social and community networks such as within family, friends and work colleagues. Stigmatisation may occur when negative social norms are expressed by intimates (family and friends) about smoking in public places or workplaces. Conversely, perhaps social norms within a community or work environment through group dynamic, may encourage smoking initiation (new cool thing to do) or discourage cessation.

Stigmatisation

The Dahlgren and Whitehead model does not refer explicitly to stigmatisation. However stigmatisation may be conceptualised in two ways; firstly, within the social and community networks and secondly, within living and working conditions (smoking areas). Firstly, like knowledge, group norms may determine if stigmatisation will occur and at what levels it occurs. Family [68, 91-92, 134], friend [91] and work colleagues [135] may play a role in determining the acceptability, appropriateness or normalisation of smoking and smoking practices. Secondly, stigmatisation of smoking can also be considered to be working outside of a person’s familiar environments (home, school and work etc) and can be experienced in public spaces [93] including bars and restaurant. Smoking areas in pubs and restaurants could

determine to what extent smokers feel stigma; if the smoking area is good (seating, heating, music, alcohol for sale) then maybe the smoker feels less stigma, than if in a minimalist smoking areas (basic shelter) where smokers are physically separated from non-smokers and norms around smoking practices are determined by the 'public'.

Aim of PhD thesis

The aim of the thesis is to assess the influence of the smoke-free workplace legislation on smoking behaviour, risk perception and consequences of the legislation on de-normalisation and stigmatisation of smoker and their smoking.

I will assess the consequences of the smoke-free workplace legislation in 3 key areas; active smoking, 1) smoking prevalence and consumption, 2) risk perception of SHS exposure and 3) de-normalisation and stigmatisation of smoker and their smoking. I will apply a mixed methods approach from a population/public health perspective.

Firstly, I will examine the relationship between smoking behaviour, age, gender and occupational class of bar workers and the general population before and after the smoke-free legislation (papers 1 and 2). Bar workers, identified as a high risk occupational group, gained a lot of attention in relation to this tobacco control measure. Before the introduction of the smoke-free workplace legislation in Ireland, bar workers were suspected and subsequently were found to have had substantial exposure to SHS [35, 39] [136-137]. In addition to high SHS exposure, bar workers have been identified as an occupational group with a high smoking prevalence [136, 138-139]. The workplace ban was anticipated to have a positive impact on the health of bar workers, not only in the short term; respiratory health, lung function, but also in the long term; reduced prevalence and consumption. For comparison and to unveil the possible secular trends occurring in Ireland as a consequence of the introduction of the smoke-free workplace legislation, I will also assess changes in smoking behaviour among comparative occupational groups from the general population.

Secondly, I will investigate the relationship between a person's individual lifestyle factor (smoker vs. non-smoker), education (primary vs. third level) and differences in knowledge of risks associated with SHS exposure, since the introduction of the legislation (chapter 4). Intensive media coverage of the smoking ban and the health risks associated with SHS exposure may have impacted knowledge of risks associated with SHS exposure in the general population. However, this knowledge may not have been disseminated across all of society, because of entrenched value systems and social acceptability of smoking and SHS exposure among lower socioeconomic groups. Higher levels of SHS exposure are associated with those living in more deprived areas experiencing higher levels of SHS exposure [140].

Thirdly, I will explore the possible emergence of changes in social and cultural norms around smoking behaviour, particularly in the social setting of the pub, since Ireland became

smoke-free (chapter 5). The separation of smokers from non-smokers may have resulted in the intensification of the de-normalisation of smoking (individual lifestyle behaviour) and as a consequence led to intensified feelings of stigma among smokers. Non-smokers views on cultural change in the pub and evidence of stigma will also be assessed.

Chapter 2

Paper 1:

Prevalence of smoking among bar workers prior to the Republic of Ireland smoke-free workplace legislation

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Prevalence of smoking among bar workers prior to the Republic of Ireland smokefree workplace legislation

Abstract

Background This study: establishes baseline prevalence of smoking and cigarette consumption among Cork bar workers prior to the Republic of Ireland's (ROI) smokefree workplace legislation; compare gender- and age-specific smoking rates and estimate the adjusted odds of being a smoker for Cork bar workers relative to the general population.

Methods Cross-sectional random sample of bar workers in Cork city and cross-sectional random telephone survey of the general population were conducted prior to the smokefree legislation.

Results Self reported smoking prevalence among Cork bar workers (n=129) was 54% (58% using cotinine-validated measures), with particularly high rates in women (70%) and 18 to 28 year olds (72%). Within the ROI (n=1240) sub-sample rates were substantially lower at 28%. Bar workers were twice as likely to be smokers as the general population sub-sample (OR = 2.15).

Conclusions Cork bar workers constitute an occupational group with an extremely high smoking prevalence.

Key words: Smoking prevalence, legislation, bar workers, smoking ban, tobacco control

Introduction

For many years legislation in Ireland has prohibited smoking in most public places, providing protection for many workers. However much of the services industry, including pubs, was exempt. On the 29th March 2004 the Republic of Ireland (ROI) became the first European country to introduce nationwide smokefree workplace legislation for all workplaces including pubs and restaurants. Smoking is now prohibited in enclosed work places with few exceptions.

The Irish services industry, as in other countries, is low paid and largely non-unionised, a situation conducive to poor health behaviours. Bar workers can be considered a highly vulnerable group whose health would be expected to benefit greatly from a smokefree work environment for two reasons. Firstly, without smoking bans in place, bar workers are exposed to high levels of secondhand smoke at work.[141-142] After the introduction of the smokefree workplace legislation in Ireland, cotinine levels dropped in non-smoking bar workers indicating significant reductions in secondhand smoke exposure. [143-144]

Secondly, research suggests that bar workers constitute an occupational group with a high proportion of active smokers. Jones *et al.*,[145] found a 40% prevalence in hospitality workers in New Zealand, and Bang & Kim[146] reported a smoking rate of 44.5% among waiters and waitresses and 39% in those working in eating and drinking venues including pubs. Although the smokefree workplace legislation in Ireland was introduced as a measure to protect workers from secondhand smoke, the policy might also result in decreased smoking in the working population. Corroborating evidence for beneficial effects of workplace smoking restrictions on smoking prevalence and consumption rates has been reported by several authors.[77, 147-150] However non-representative samples and lack of comparison with occupation-specific general population smoking rates of the respective countries limit the interpretation and generalizability of these findings.

Little is known about smoking rates in hospitality workers in Ireland although anecdotal evidence suggested that the rate of smoking among Irish bar workers was high. In order to establish smoking prevalence estimates for this group we enrolled a random sample of Cork city bar workers comprising floor staff, bar managers and owners. The objectives were (1) to establish a baseline prevalence of smoking and cigarette consumption among Cork bar workers prior to the introduction of the smokefree workplace legislation; (2) to compare gender- and age-specific smoking rates in Cork bar workers with the equivalent occupational classes within the general population; and (3) to estimate the adjusted odds of being a smoker for Cork bar workers relative to the general population (sub-sample).

This study provides the first estimates of smoking prevalence and cigarette consumption in bar workers adjusted to enable comparisons with the general population.

Methods

We used two datasets for this study: 1) bar workers from Cork City, part of a larger study, the ‘All-Ireland bar study’ reported elsewhere[143]; 2) a subset from a general population (ROI) telephone survey conducted by TNS mrbi, a commercial research company.

Sample selection

Bar workers

A three step cluster sampling strategy was used (Fig 1). First, 300 streets were randomly selected from a list of all Cork city streets (obtained from Cork City Corporation), using the random number generator in SPSS 12.0.1 (SPSS, Chicago, IL). Second, all pubs located on these 300 streets were selected resulting in 171 pubs representing 44 % of the approximately 385 pubs in Cork city. Third, we randomly selected up to two bar workers at the time of the visit. If only one/two worker(s) was/were present at the time of the visit, only one/two worker(s) was/were selected. If a randomly selected bar worker was unable or unwilling to

participate, a replacement bar worker was then randomly selected (if possible) from the same pub.

Participants were interviewed in the pub where they worked between January and March 2004 (before implementation of the smokefree workplace legislation). Only those actively involved in everyday tasks within the pub and who were over 18 years were eligible. We enrolled both smoking and non-smoking bar workers and all occupational positions i.e. owners, managers, full- and part-time bar staff. Follow-up post-ban surveys were completed one and two years later, but will not be detailed here.

General population sub-sample

General population data were obtained from an ongoing national monthly telephone survey of 1,000 randomly selected individuals (>15 years) during the same time period as the bar workers survey (January to March 2004). Participants were selected based on randomly generated phone numbers; targets were met in relation to gender, age, occupational class and region. For comparison purposes the general population sample was restricted to participants of similar age (≥ 18 years) and with occupations equivalent to bar workers. This sample is referred to as the general population sub-sample. We used un-weighted data as we compared estimates within age, gender and occupational class strata.

Measures

Bar workers

Survey administration and salivary cotinine sampling procedures were described in more detail elsewhere.[143]

Sociodemographics

Participants were asked about their gender, age, and occupational position as an indicator of occupational class. Occupational class was determined by involvement in the pub: owners and managers were categorised as ‘manager’ (occupational class C2), temporary and permanent staff as ‘staff’ (occupational class DE). The term ‘bar worker’ refers to the entire

sample. The occupational class classification was taken from the ROI Central Statistics Office (CSO)[151] classification which is based on the UK Standard Occupational Classification.[152]

Smoking status

Participants were asked about their current smoking status, average cigarette consumption per day and smoking history. Two different measures of smoking status were used for bar workers: 'self reported' smoking status and 'combined self report and cotinine' smoking status. Self reported smoking status (self reported current smoker versus current non-smoker) was used when comparing bar workers with the general population sub-sample.

Combined self report and cotinine smoking status was obtained by validating self reports by cotinine (where possible). Non-smokers were defined as those who self reported as current non-smokers and had cotinine concentration levels $<20\text{ng/ml}$ (113.6nmol/l).[143] Smokers were defined as those who self reported as current smokers plus those who self reported to be non-smokers but with cotinine concentration levels of $\geq 20\text{ng/ml}$ (113.6nmol/l). In cases where cotinine was not available due to insufficient samples or refusals, the self reported smoking status was used (28 cases). The self reported and cotinine combined measure was used to provide a more accurate estimate of the smoking prevalence in bar workers as it takes potential under-reporting of smoking into account.

General population sub-sample

Sociodemographics and smoking status

Participants were asked about their gender, age group, self reported smoking status ('do you smoke >1 cigarette per week?'), self reported cigarette smoking consumption and occupation. Occupation classes equivalent to the bar managers and owners (occupational class C2) and bar staff (occupational class DE) were selected.

Statistical analysis

Data analysis was conducted using SPSS 12.0.1 (SPSS, Chicago, IL). Pearson's chi square or Fisher's exact test was used to examine gender, age and occupational class patterns in prevalence. The Mann-Whitney U test and the Kruskal Wallis H test were used to test for differences in consumption by sociodemographic characteristics. Logistic regression models were built for both samples with smoking status as outcome, adjusting for gender, age and occupational class.

Results

Study participation

Study participation is shown in Figure 1. A final pub participation rate of 69.5% (98/141) with 129 bar workers enrolled in the study. A replacement bar worker was required in 9% of cases.

Of the 2460 individuals enrolled in the national telephone survey over the three months, there were 1240 participants ≥ 18 years with occupational class equivalent to the bar workers.

Table 1 shows the demographic characteristics of the participating bar workers and the general population sub-sample. Among participating bar workers 69% were male, mean age 33 years; 56% were temporary or permanent staff (equivalent to occupational class DE) and the remaining 44% were either owners or managers (equivalent to occupational class C2). In comparison to the general population sub-sample, bar workers were more likely to be male and younger (88% under 49 years of age compared to 52%).

Bar worker smoking prevalence: combined self report and cotinine

Table II shows the prevalence of smoking among Cork bar workers by gender, age and occupational class. The overall prevalence of smoking (combined self report and cotinine) in bar workers was 58.1% (95% CI 49.5-66.6); 70% of female bar workers were smokers compared to 53% of male bar workers ($p=0.067$). Smoking prevalence was 72.3% in the 18 to 28 year olds but decreased significantly with age. Staff had a significantly higher smoking prevalence (68%) than managers (46%) ($p=0.01$).

Bar worker prevalence (self reported) in comparison to the general population sub-sample

We compared the prevalence for bar workers with the corresponding rates in the general population sub-sample (Table II). As cotinine-validated data were not available for the general population, we used the self reported smoking status for the bar workers which vary slightly from the partially cotinine-validated estimates. The overall prevalence of smoking in the general population sub-sample was 28.3% compared to 54.3% in bar workers. As the age and gender distributions differ, we compared gender- and age-specific rates. Higher prevalence rates in bar workers were observed for both genders and both occupational classes. Among bar workers, women (65%) were more likely to be smokers than men (49%) ($p=0.07$), whereas almost equal proportions of men and women (29.1% vs 27.5%) in the general population sub-sample were smokers. The gender difference was particularly striking

in bar workers classified as managers: 37.5% of male managers smoked compared to 66.7% of female managers. This pattern in managers was not observed in the general population sub-sample. Bar workers also had substantially higher rates within the younger age groups, especially the 18 to 28 year olds. Comparison of the older age groups was limited due to the small numbers of bar workers.

Bar worker cigarette consumption in comparison with the general population sub-sample

The mean number of cigarettes consumed (self reported) by bar workers was 16.7 (SD=11.5) per day, similar to the 16.9 (SD=9.8) per day consumed by the general population sub-sample (Table III). In the general population sub-sample, men consumed more cigarettes than women (19 versus 15 cigarettes per day, $p=0.018$); this gender difference was not observed in bar workers ($p=0.8$). Consumption varied by age among bar workers ($p=0.099$) with the highest consumption rates in the 29 to 48 year age category. Average consumption for 29 to 48 year old bar workers was much higher than in the corresponding age groups of the general population but the confidence intervals of the estimates in bar workers were very wide. Among bar workers, comparison of average consumption between male and female staff and managers was constrained by the small numbers within these sub-categories.

Adjusted smoking prevalence

In order to control for the differences in age, gender and occupation distribution between the bar worker sample and the general population sub-sample, three logistic regression models were built, one for bar workers, one for the general population sub-sample and a final model comparing bar workers with the general population sub-sample taking age, gender and occupational class into account (Table IV). Due to small numbers in the older age groups, the age categories '49 – 58 yrs' and '59 – 78 yrs' were combined.

Bar workers were more than twice as likely to be smokers as the general population sub-sample (adjusted OR=2.15, 95% confidence limits 1.45 to 3.17, $p<0.01$). In all three models age was an independent predictor of smoking with generally decreasing prevalence by age. Neither gender nor occupational class were found to be independent predictors of smoking status in any of the models.

Discussion

Main findings

Smoking prevalence among Cork bar workers is extremely high at 58%, higher than in other similar studies. [145-146] Due to the random sampling methods employed, the high response rate and the use of validated smoking status, this study provides to our knowledge the best estimate available of smoking prevalence in this occupational group. A higher prevalence rate (83.3%) was found in male Asian American restaurant workers in Boston.[153] However Averbach's estimates were based on a convenience sample and are not generalisable to a larger population.

The social and cultural environment in Ireland may influence bar workers' smoking behaviour. A strong tradition of alcohol consumption and its association with smoking within the pub culture in Ireland meant that bar workers were continuously surrounded by smoke and alcohol with possible 'normalisation' of smoking. This may partially explain the magnitude of this group's smoking prevalence. Another explanation may be that smokers, especially young smokers, are attracted to the pub trade. In our sample, the mean age bar workers started smoking was 17.7 years of age with female bar workers starting at a slightly younger age (17.3 years) than males (18.0 years). Evidence on whether individuals were already smokers before they started working in the hospitality industry or whether they became smokers after they started working is best obtained by longitudinal studies.

Furthermore bar workers cannot be considered a homogeneous group; they comprised bar owners, managers, and temporary and permanent staff with different socio-economic positions. As higher smoking rates are commonly observed within lower occupational and social classes, we conducted class specific analyses. As expected, bar staff had a significantly higher prevalence of smoking than bar managers.

Bar workers had more than double the odds of being a smoker than individuals in the general population sub-sample. This result highlights the magnitude of smoking as an issue in this unique population. Interestingly, age remained an independent significant predictor of smoking in both samples.

The present study has established a baseline prevalence among bar workers which can be contrasted with post-ban prevalence thereby clarifying the differential effects of workplace health protection measures on smoking behaviour.

Limitations of this study

Because of the random sampling strategy and the low refusal rate our results can be seen as representative of bar workers in a city area. Cork city is a small urban area comprising 123,000 citizens. It is possible that smoking behaviour among bar workers is different in rural areas; however we are confident that our sample also included people from rural backgrounds [private addresses were available for seventy five participants (58%); sixty (80%) identified that they were currently living in Cork city and fifteen (20%) identified that they were currently living outside the city]. We have no reason to expect significant differences in smoking patterns for bar workers within the RoI generally.

With regard to the telephone survey assessment of population smoking rates, there is likely to be under-sampling of some population groups such as foreign workers and students, who are less likely to have land lines. Smoking rates in such groups may differ from the general population. Other ROI general population surveys such as SLÁN[154-155] do exist but were either unavailable for our analysis or may be seen as out of date; we therefore consider our dataset to be the best estimate of smoking available for the general population.

Differences in methodology between the general population and bar worker samples limited comparisons. Bar workers were interviewed in a face to face interview while the general population were interviewed over the telephone, this may have introduced a bias into the general population data as some evidence suggests that interviewee are more likely to give socially desirable answers during a telephone interview [156]. This difference may have inflated the odds ratio comparing the prevalence of bar workers with the prevalence of the general population. Coupled with the likely under-sampling of foreign workers and students, this general population sample may underestimate the true smoking prevalence in Ireland. Classification of occupational class may not be completely comparable between the two samples but this should not affect the overall findings. And finally, different questions were used to assess self reported smoking status; the general population sub-sample were asked 'Do you smoke more than 1 cigarette per week?' while bar workers were asked whether they were current, occasional, ex or never smokers. Very light smoker may have underestimated their smoking in the bar worker sample, however the availability of cotinine concentrations for most of the bar workers allowed us to identify non-reporting smokers. The fact that only five individuals were so re-categorised showed that bar workers' self reporting was reasonably accurate.

As cotinine concentrations were not available for 28 individuals, we were not able to validate all self reports. We cannot fully exclude systematic bias, i.e. that particularly smokers refused to provide a saliva sample. However as only 14 (50%) of those without cotinine samples were due to refusal [5 of whom were self reported smokers], and the rest of missing cotinine samples was caused by insufficient or contaminated samples [10 of whom were self reported smokers]. In addition missing cotinine values were fairly evenly distributed among smokers and non-smokers: 15 reported being smokers, 5 reported being ex-smokers and 7 reported being never smokers. Re-analysis including only those individuals who had cotinine data (n=101) showed rates that were generally very similar to those reported in Table II: a smoking rate (cotinine-validated) of 59.4% and a very similar distribution of smokers between the genders (53% in males, 73% in females) and both occupational classes (managers 48%, staff 69%), but a slightly higher rate in the youngest age group of the 18 to 28 year olds (77%).

Establishing baseline prevalence among this vulnerable occupational group will facilitate post-ban examinations of the impact of the smoking ban, a legal measure that is currently considered in several countries. The effect of the Irish smoking ban on passive smoking are well documented such as the reduction in exposure to second-hand smoke in non-smoking bar workers [143], exposure to particulate matter and benzene[34] and subsequent improvements in respiratory symptoms and respiratory health[34, 143]. However as the health consequences of active smoking are more pronounced than those of passive smoking, the impact of the ban on active smoking behaviour in addition to existing evidence of positive effects on passive smoke levels may constitute important scientific evidence for future policy planning.

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Conflicts of interest

SA is a member of the Board of the Irish Office of Tobacco Control (unpaid position).

IJP is the unpaid chair of the Irish Research Institute for a Tobacco Free Society.

Key Points

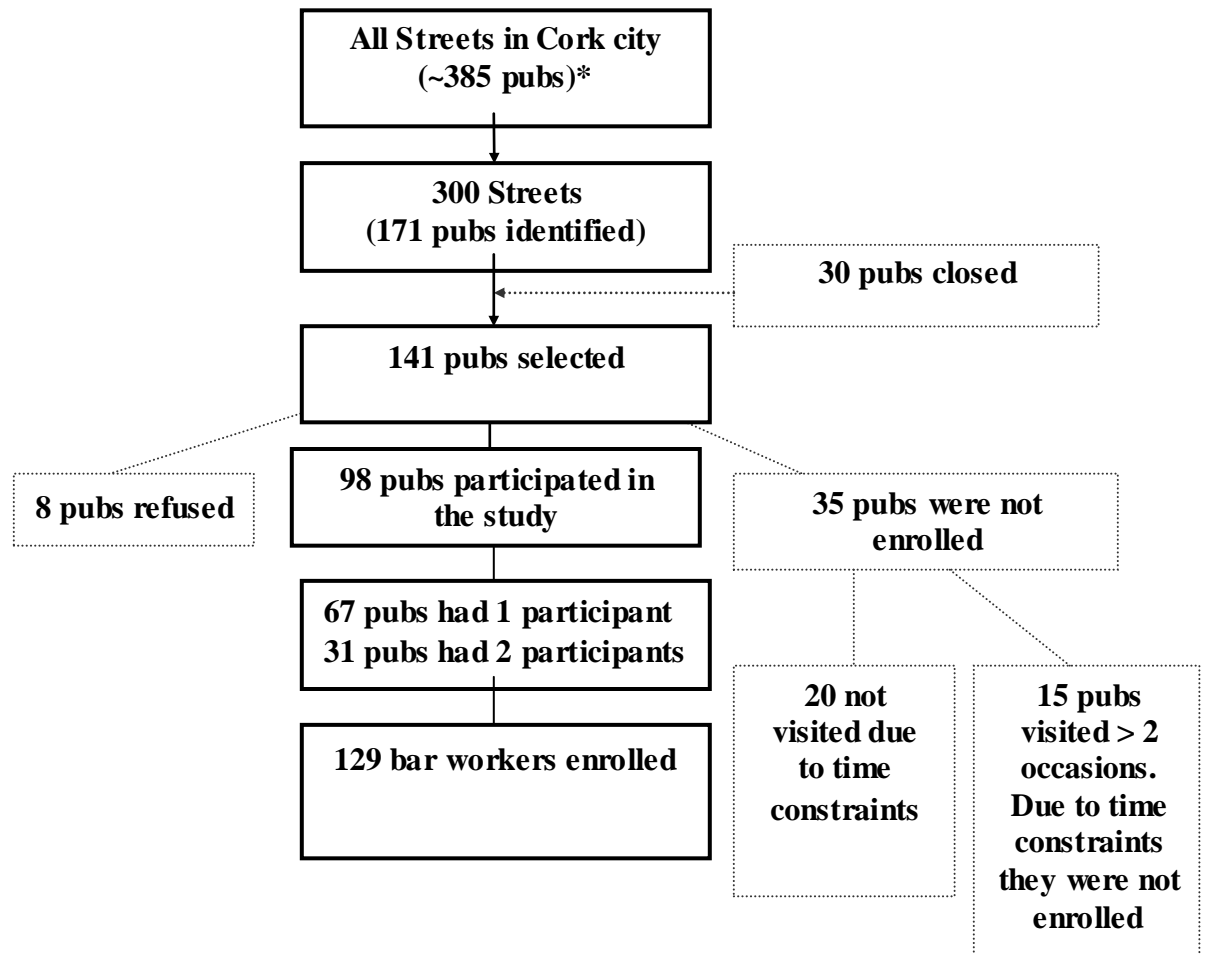
- Prevalence of smoking in Irish bar workers is twice that of a comparable sub-sample of the general population.
- Bar workers are an occupational group with an extremely high smoking prevalence. Coupled with the exposure to high levels of secondhand smoke before the smokefree workplace legislation this “double exposure” makes them a high risk group for smoking-related illnesses.

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Figure 1: Sampling and participation of Cork city bars and bar workers



*Best estimate of number of pubs in Cork city in early 2004

Table I: Characteristics of Cork bar workers (n=129) and of Republic of Ireland general population sub-sample (n=1240). Figures are n (%) unless otherwise specified.

	Bar workers	General population sub-sample
	N=129	N=1240
	n (%)	n (%)
Gender		
Male	89 (69.0)	619 (49.9)
Mean age in years (SD)		
Total	32.7 (12.1)	n/a
Males	33.0 (11.6)	n/a
Females	32.2 (13.3)	n/a
Age Group		
18-28 years	65 (50.4)	184 (14.8)
29-38 years	30 (23.3)	215 (17.3)
39-48 years	19 (14.7)	243 (19.6)
49-58 years	9 (7.0)	214 (17.3)
>59 years	6 (4.7)	384 (31.0)
Occupational Class		
‘Manager’*	57 (44.2)	563 (45.4)
Males	48 (84.2)	313 (55.6)
Females	9 (15.8)	250 (44.4)
‘Staff’ †	72 (55.8)	677 (54.6)
Males	41 (56.9)	306 (45.2)
Females	31 (43.1)	371 (54.8)

* Bar owner or bar manager (bar workers) / occupational class C2 (general population sub-sample)

† Permanent or temporary bar workers (bar workers) / occupational class DE (general population sub-sample)

Table II: Smoking status in Cork bar workers (self-report & cotinine combined and self report) and in the Republic of Ireland general population sub-sample (self report) by sociodemographic characteristics

	Bar workers					General population sub sample		
	n	% smokers (self report & cotinine)	(95% CI)	% smokers (self report)	(95% CI)	n	% smokers (self report)	(95% CI)
Total	129	58.1	(49.6 - 66.6)	54.3	(45.7 - 62.9)	1240	28.3	(25.8 - 30.8)
Gender								
Male	89	52.8	(42.4 – 63.2)	49.5	(39.1 - 59.9)	619	29.1	(25.5 - 32.7)
Female	40	70	(55.8 – 84.2)	65	(50.2 – 79.8)	621	27.5	(24.0 – 31.0)
Age groups (yrs)								
18-28	65	72.3	(61.4 – 83.2)	67.7	(56.3 – 79.1)	184	36.4	(29.4-43.4)
29-38	30	56.7	(39.0 – 74.4)	53.3	(35.4 - 71.2)	215	39.5	(33.0 – 46.0)
39-48	19	36.8	(15.1 – 58.5)	36.8	(15.1 – 58.5)	243	30	(24.2 - 35.8)
49-58	9	33.3	(2.5 – 64.1)	33.3	(2.5 – 64.1)	214	30.8	(24.6 - 37.0)
>58	6	16.7	(-13.1 – 46.5)	0	0	384	16	(12.3 - 19.7)
Occupational class								
Manager	57	45.6	(32.7 – 58.5)	42.1	(29.3 - 54.9)	563	30.6	(26.8 - 34.4)
Male	48	41.7	(27.8 – 55.6)	37.5	(23.8 - 51.2)	313	31.3	(26.2 - 36.4)
Female	9	66.7	(35.9 – 97.5)	66.7	(35.9 - 97.5)	250	29.6	(23.9 - 35.3)
Staff	72	68.1	(57.3 – 78.9)	63.9	(52.8 - 75.0)	677	26.4	(23.1 - 29.7)
Male	41	66	(51.5 – 80.5)	63.4	(48.7 - 78.1)	306	26.8	(21.8 - 31.8)
Female	31	71	(55.0 – 87.0)	64.5	(47.7 – 81.3)	371	26.1	(21.7 - 30.7)

Table III: Self-reported cigarette consumption in Cork bar workers and in the Republic of Ireland general population sub-sample by sociodemographic characteristics

	Bar workers (self reported smokers)			General population sub sample (smokers)		
	n	Mean no. of cigarettes consumed per day	(95% CI)	n	Mean no. of cigarettes consumed per day	(95% CI)
Total	70	16.7 (SD=11.5)	(13.9 – 19.4)	342*	16.9 (SD=9.8)	(15.9 – 18.0)
Gender						
Male	44	16.9	(13.4 - 20.4)	175	18.5	(16.8 - 20.2)
Female	26	16.4	(11.7 - 21.0)	167	15.3	(14.2 - 16.5)
Age groups (yrs)						
18-28	44	13.4	(11.3 - 15.6)	65	14.7	(10.9 - 17.6)
29-38	16	23.2	(15.7 - 30.7)	83	16.5	(10.5 - 20.2)
39-48	7	23.4	(6.4 - 40.5)	72	18.0	(14.9 - 18.1)
49-58	3	13.7	(23.2 - 50.5)	64	19.4	(15.9 - 20.1)
>58	0	Not applicable	--	58	16.1	(15.8 - 19.8)
Occupational class						
Manager	24	15.6	(10.7 - 20.5)	169	16.2	(15.0 - 17.5)
Male	18	13.6	(9.9 - 17.2)	96	17.5	(15.7 - 19.4)
Female	6	21.8	(1.6 – 42.0)	73	14.6	(12.9 - 16.2)
Staff	46	17.2	(13.8 - 20.6)	173	17.6	(16 - 19.3)
Male	26	19.2	(13.8 - 24.5)	79	19.6	(16.6 - 22.7)
Female	20	14.7	(10.9 - 18.5)	94	15.9	(14.3 - 17.5)

*9 missing values for cigarette consumption among the general population sub-sample

Table IV: Logistic regression models to identify the adjusted odds of being a smoker (self-reported) for Cork bar workers, for the Republic of Ireland general population sub-sample, and for bar workers and general population sub-sample combined.

Variable	Adjusted odds ratio	95% CI	<i>p</i> value
Bar workers (n=129)*			
Manager vs. staff	0.61	0.27 – 1.39	0.24
Female vs. male	1.57	0.67 – 3.70	0.30
Age groups (reference 18 – 28 yrs)			0.02
29 - 38 yrs	0.67	0.26 – 1.71	0.40
39 – 48 yrs	0.31	0.10 - 0.91	0.03
> 48 yrs	0.15	0.04 –0.61	0.01
General population sub sample (n=1240)*			
Manager vs. staff	1.00	0.76 – 1.30	0.97
Female vs. male	0.92	0.72 – 1.18	0.52
Age groups (reference 18 – 28 yrs)			<0.001
29 - 38 yrs	1.15	0.77 – 1.73	0.51
39 – 48 yrs	0.75	0.50 – 1.13	0.17
> 48 yrs	0.47	0.32 – 0.67	<0.001
Bar workers and general population sub sample (n=1369) †			
Bar worker versus general population	2.15	1.45 – 3.17	<0.001
Manager vs. staff	0.91	0.71 – 1.16	0.44
Female vs. male	0.98	0.77 – 1.24	0.85
Age groups (reference 18 – 28 yrs)			<0.001
29 - 38 yrs	0.98	0.68 – 1.41	0.92
39 – 48 yrs	0.64	0.44 – 0.93	0.02
> 48 yrs	0.39	0.28 – 0.55	<0.001

* Odds ratio adjusted for occupational class, gender and age group.

† Odds ratio adjusted for bar worker versus general population sub-sample, occupational class, gender and age group.

Chapter 3

Paper 2:

The effect of the Irish smoke-free workplace legislation on smoking among bar workers

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Abstract

Background

On March 29th 2004, the Republic of Ireland (ROI) became the first EU country to introduce a nationwide ban on workplace smoking. While the focus of this measure was to protect worker health by reducing exposure to secondhand smoke, other effects such as a greater reduction in smoking prevalence and consumption were likely among bar workers.

Methods

A random sample of bar workers from Cork city were surveyed before (n=129) and after (n=107; 82.9% follow-up rate) implementation of the smoke-free legislation. Self report and combined self report and cotinine concentration were used to determine smoking status. For comparison a cross-sectional random telephone survey of the general population (ROI) was conducted before and one year after the smoke-free legislation. There were 1240 pre- and 1221 participants post-ban in the equivalent age and occupational sub-set of the general population.

Results

There was a non-significant decline in smoking prevalence among bar workers one year post-ban (self report: -2.8% from 51.4% to 48.6%, p=0.51; combined self report and cotinine: -4.7% from 56.1% to 51.4%, p=0.13), but a significant decline in consumption of four cigarettes (95%CI 2.21 to 6.36) per day. Within the occupationally equivalent general population sub-sample there was a near significant drop (3.5%, p=0.06) in smoking prevalence but no significant change in consumption.

Conclusions

Ireland's smoke-free workplace legislation was accompanied by a drop in prevalence in both bar workers and the general population sub-sample.

Key words Smoking prevalence, cigarette consumption, smoke-free legislation, bar workers, tobacco control, All Ireland Bar Study

Introduction

On March 29th 2004, the Republic of Ireland introduced the first nationwide ban on workplace smoking including bars and restaurants in the EU. The focus of this measure was to protect worker health by reducing exposure to secondhand smoke (SHS). It was expected that other benefits would emerge from the introduction of the ban. With fewer opportunities to smoke, possible changing of social norms [157] and extensive health campaigns on the harmful effects of active smoking and SHS coinciding with the ban, [158-161] a reduction in both smoking prevalence and consumption was likely.

Bar workers, identified as a high risk occupational group, gained a lot of attention in relation to this tobacco control measure. Firstly before the introduction of the smoke-free workplace legislation in Ireland, bar workers were suspected and subsequently were found to have had substantial exposure to SHS. [137, 162-163] Secondly bar workers have been identified as an occupational group with high smoking prevalence. [138-139, 164] The impact of the smoke-free legislation on smoking prevalence and consumption was expected to be greater on bar workers than on the general population as the law would have an immediate influence on bar workers' occupational setting as well a societal change.

Workplace and general population studies have indicated that smoking policies and restrictions are associated with a reduction in the number of cigarettes smoked by continuing smokers and an increase in quitting rates [1, 3, 78-79, 157, 165-168] although Eisner, Smith & Blanc [2] found no change. It remains to be confirmed if these changes are maintained over longer study periods. Few studies have examined changes in smoking behaviour after a national smokefree workplace legislation among affected workers in general, [1] or hospitality industry workers in particular. [2-3] All were based on self-reported smoking status and did not take secular trends into account, for example by comparing changes with

changes in the general population. None specifically looked at a representative group of bar workers before and after comprehensive smoke-free legislation.

This study assesses changes in smoking prevalence and cigarette consumption among a random sample of bar workers before and one year after the introduction of the workplace legislation. We used the general population as a comparison group and compared changes in prevalence and consumption in corresponding occupational, age and gender strata of the general population during the same period. We hypothesized 1) significant drops in prevalence and cigarette consumption in bar workers, and 2) that these changes would be greater in bar workers than in the general population due to the nature of bar work and the fact that, unlike for other occupations, no occupational smoke-free policies existed for bar workers prior to the legislative ban.

Methods

We used two separate datasets: 1) a follow-up sample of bar workers from Cork City, part of a larger study, the ‘All-Ireland bar study’ reported elsewhere [162]; 2) repeated cross-sectional samples from a general population (ROI) telephone survey conducted by TNS mrbi, a commercial research company.

Sample selection

Bar workers

A three step cluster sampling strategy was used and is outlined in detail elsewhere. [164] Participants were interviewed between January and March 2004 (before implementation of the smoke-free workplace legislation) and again during January to March 2005 (one year after implementation). We enrolled both smoking and non-smoking bar workers and all occupational positions i.e. owners, managers, full-time and part-time bar staff. Included in

our follow-up were those no longer working as bar workers (separate analyses were completed with and without those no longer in bar work).

General population sub-sample

General population data were obtained from an ongoing monthly telephone survey conducted by TNS mrbi of 1,000 randomly selected individuals (15+ years) during the same time period as the bar workers survey (January - March 2004 and January - March 2005). Participants were selected based on randomly generated phone numbers; targets were met in relation to sex, age, occupational class and region. For comparison we restricted the sample to participants of similar age (18 to 78 years) and occupational class, referred to as the general population sub-sample. Cross-sectional samples of 1240 and 1221 individuals were generated pre-ban and one year post-ban respectively from the general population sub-group. Un-weighted data were used to compare estimates within age, sex and occupational class strata.

Measures

Bar workers

Survey administration including salivary cotinine sampling procedures and respiratory health symptom questions have been described in more detail elsewhere [162].

Sociodemographics

Questions on sex, age, and occupational position were asked. Occupational class was determined by involvement in the pub: owners and managers were categorised as ‘manager’ (occupational class C2), temporary and permanent staff as ‘staff’ (occupational class DE). The term ‘bar worker’ refers to the entire sample. The occupational class classification was taken from the Irish Central Statistics Office (CSO) classification which is based on the UK Standard Occupational Classification.

Smoking status

Questions regarding participants' current smoking status, average number of cigarettes consumed per day, smoking history, and perceived influence of the ban on smoking behaviour were asked. Two different measures of smoking status were used for bar workers: 'self reported' and 'combined self report and cotinine' smoking status. Self reported smoking status (current smoker versus current non-smoker) was used in comparisons with the general population as only self-reports were available for the general population. The combined self report and cotinine measure, as the more accurate measure of smoking status, was used for examining the changes in smoking status of bar workers. In cases where cotinine was not available due to refusals, insufficient or contaminated samples the self reported smoking status was used. In cases where disagreements occurred between the self reported smoking status and the cotinine measure, cotinine was then used as the overriding measure of smoking status. Pre-ban 28 cotinine values were unavailable, 14 (50%) due to refusal, the remaining due to insufficient or contaminated samples. No sex, age or occupational differences were evident among those individuals without cotinine samples. Post-ban 43 cotinine values were unavailable, 23 (54%) due to refusals, the remaining 20 were due to insufficient or contaminated samples.

General population sub-sample

Sociodemographics and smoking status

Participants were asked about their sex, age group, occupational class, self reported smoking status ('Do you smoke >1 cigarette per week?'), self reported daily cigarette consumption and occupation. To make comparisons with the bar workers sample, occupational classes equivalent to the bar managers and owners (occupational class C2) and bar staff (occupational class DE) were selected.

Statistical analysis

Data analysis was conducted using SPSS 12.0.1 (SPSS, Chicago, IL).

Bar workers

McNemar chi squared tests were used to examine prevalence changes within each sex, age group and occupational class between pre- and post-ban. Paired sample t-tests were used to test changes in consumption. In the case of a statistically significant result for the entire sample, three separate two-factorial analysis of variance models with repeated measures were built using the General Linear Model function (GLM) in SPSS, testing for statistical interaction of subgroups and the introduction of the ban. Models included pre- versus post-ban as within-subject variable and sex, age group, and occupational class as between-subject factors, respectively.

General population sub-sample

Pearson's chi square or Fisher's exact test was used to examine differences in prevalence within each sex, age and occupational class. Independent sample t-test was used to test for differences in consumption.

Results

Bar worker study participation

Pub participation rate was 69.5% (98/141). Altogether 129 bar workers were enrolled in the study; 67 pubs had one and 31 pubs had two participants interviewed. A replacement bar worker was required in 9% of cases. One year after the ban 107 of the 129 bar workers participated again (82.9%). Of these 107 participants, 16 were no longer in bar work; therefore 91 active bar workers participated in the post-ban survey (follow-up rate of 70.5%).

The analysis of the follow-up group includes the 16 no longer in bar work unless otherwise stated.

Table 1 shows the demographic characteristics at baseline of the 107 bar workers who participated at follow-up. Seventy-one percent of these bar workers were male, with mean age 33 years; 58% were temporary or permanent ‘staff’ (equivalent to occupational class DE) and 51% were smokers. They were not significantly different in terms of sex, age, occupational class and smoking status from the 22 bar workers who were lost to follow-up, although there was a slight tendency for drop-outs to be younger, manager and current smoker. Three participants were re-classified as smokers using cotinine validation.

In comparison to the general population sub-sample, bar workers at baseline were more likely to be male and younger (88% under 49 years of age compared to 52% of the general population sub-sample).

Changes in smoking prevalence and consumption rates among bar workers

Table II shows changes in self report and ‘combined self report and cotinine’ smoking prevalence among Cork bar workers by sex, age and occupational class. Self-reported prevalence of smoking in bar workers was 51.4% (95% CI; 41.9% to 60.9%) pre-ban with a non-significant drop of 2.8% post-ban to 48.6% (95% CI: 39.1% to 58.1%). A larger but still non-significant drop (4.7%) was seen using the ‘combined self report and cotinine’ measure of smoking status. The drop was more pronounced in men, in staff, and in the younger age groups (18 – 38 years). Female bar workers (67.7% to 64.5%), those in the 18 to 28 year range (72% to 66%) and staff (66.1% to 59.7%) continued to have high smoking rates post-ban.

The mean number of cigarettes consumed per day (self reported) among smoking bar workers was 18.1 (SD=11.8) pre-ban, dropping significantly by four cigarettes per day ($p<0.001$) to

13.9 (SD=8.6) post-ban (Table II). The drop was similar among males and females and among staff and managers and was most pronounced in the 29-38 year old age group (9.0 cigarettes). In order to test whether the drop in consumption affected particular groups more than other groups, we tested for statistical interaction of pre- versus post-ban measurement and sex, age group and occupational class in three separate analysis of variance models with repeated measures; none of the interaction terms were statistically significant.

Within the follow-up sample of bar workers 16 participants were no longer working in a pub at the time of the second interview. Fourteen of those 16 participants were smokers (combined self report and cotinine). We conducted analysis separately for those no longer working in bars resulting in similar results for prevalence (2 participants quit, $p=0.5$) and consumption (mean drop of 9.25, $p=0.001$ among 12 smokers).

Changes in smoking prevalence and consumption rates in the general population sub-sample

Prevalence of self-reported smoking in this general population sub-sample was 28.3% pre-ban with a near significant drop of 3.5% one year post-ban to 24.8% ($p=0.06$) (Table III). Significant declines were seen among males (29.1% to 23.1%; $p=0.02$); 18-28 year olds (36.4% to 26.6%; $p=0.05$) and the managerial occupational class C2 (30.6% to 25.0%; $p=0.04$).

Smoking consumption dropped within this general population sub-sample from 16.9 per day to 16.0 per day post-ban ($p=0.19$) (Table IV), with no significant changes by sex or age. However the drop in consumption among the DE category (equivalent to bar staff) from 17.6 cigarettes per day to 15.8 post-ban approached significance ($p=0.08$).

Discussion

The Irish national smoke-free workplace legislation was associated with a reduction in cigarette consumption among an 'at risk' occupational group with a very high smoking prevalence. The decline was most notable among the 18-28 year old age group. A drop in consumption was anticipated as several studies have suggested that policies and restrictions on smoking result in lower consumption among smokers. The drop in consumption of four cigarettes per day found in our study was slightly higher than the 3.1 cigarettes per day drop (95% CI 2.4 – 3.8) reported by a systematic review of the impact of smoking policies or restrictions. [166] As this review included studies conducted among various occupations, the smaller decrease in cigarette consumption is not surprising. In Ireland, bar workers were one of the few occupational groups that were allowed to smoke without any restrictions while working in an environment where smoking constituted part of their occupational culture. The decline in cigarette consumption was mirrored by the bar workers' perceptions: when the smokers were asked how they feel the smoking ban will influence / has influenced the amount smoked, 53% anticipated that they would at least reduce the amount they smoked and 67% reported that they actually reduced their consumption post-ban.

Although we found a considerable reduction in smoking prevalence among bar workers, we were not able to rule out the role of chance due to the relatively small numbers of smoking bar workers for whom data were available for pre- and post-ban analysis. Fichtenberg and Glantz [166] review of workplace-specific smokefree policies on smoking prevalence estimated that these policies were associated with a decrease in smoking prevalence of 3.8% (95% CI 2.8 %– 4.7%).

This estimate was remarkably similar to the observed drop of 3.5% in our general population sub-sample and similar to the observed prevalence changes in bar workers.

Consistent with our expectations bar workers showed a much stronger decrease in cigarette consumption than the general population sub-sample. This is true for all subgroups such as sex, age, and occupational class.

Contrary to our expectations, the prevalence drop among bar workers was not statistically significant and smaller (2.8%, 95%CI -1.1-1.6) than the drop within the general population sub-sample (3.5%; 95%CI 0.00– 7.00). The general population sub-sample had a larger sample size providing sufficient statistical power to show significant drops in prevalence among males, 18-28 year olds and managers.

Study limitations

While attempts were made to create a suitable comparison group for bar workers from within the general population sample by selecting a similar age and occupational sub-group, important differences still exist between the two groups. Bar workers are a unique occupational group with a very high smoking prevalence and were exposed to very high levels of workplace SHS before the implementation of the ban.

Differences in methodology may also have biased results. Bar workers were interviewed in a face to face interview while the general population were interviewed over the telephone. Evidence suggests that interviewees are more likely to give socially desirable answers during a telephone interview. [156] While this bias may have resulted in an underestimation of the smoking prevalence and consumption in the general population, it was not likely to systematically bias the estimates of the changes pre- to post ban.

This work forms part of a larger ‘All Ireland Bar Study’, which included bar workers from across Ireland. Bar workers from Cork were the only workers recruited randomly within the AIBS and as such we believe that Cork bar workers, even considering the small sample size

and large confidence intervals, can provide the most accurate measure of the absolute magnitude of prevalence changes for this occupational group.

Cork city is a small urban area comprising 123,000 citizens at the time of surveying. Due to the sampling strategy and low refusal rate, the results can be regarded as representative of bar workers in an urban area. It is possible that smoking behaviour among bar workers in rural areas may differ from those in urban areas; however the sample also included participants living outside the city (estimated at about 20%. [164] There is no reason to expect significant differences in smoking patterns among bar workers within the Republic of Ireland generally.

With regard to the telephone survey assessment of population smoking rates, there is possible under-sampling of population groups who are less likely to have telephone land lines. Smoking rates in such groups may be higher than in the general population. Other ROI general population surveys such as SLÁN (Survey of Lifestyle, Attitudes and Nutrition) do exist but were either unavailable for our analysis or out-dated (SLÁN)[154-155]; we therefore consider our dataset to be the best available estimate of general population smoking rates for that time period.

Without a formal control group we cannot rule out that the observed decline in prevalence and cigarette consumption was part of a secular trend in the entire Irish population independent of the smoke-free legislation. However, the emphasis of the present study was not to assess the impact of the smoking ban on smoking behaviour in the general population, but to assess the effect of the legislation on bar workers *in comparison* to the general population to elucidate whether this occupational group benefited more from the smoking ban than the general population.

As it is envisaged that the health impact of this legislation will only be truly evident in years to come, an additional follow-up with the same bar workers two years after the ban is being undertaken to help determine the long-term effects of smoke-free legislation on smoking behaviour.

In summary, our findings suggest that the Irish smoking ban was potentially successful in encouraging smokers to reduce the number of cigarette consumed within an occupational specific context but not necessarily within the same occupational classes in the general population. However as the general population sub-sample showed, in contrast to the barworkers, a significant decrease in prevalence in some groups we therefore conclude that the smoking ban affected the general population more in terms of giving up rather than just cutting down. It needs to be observed whether these changes will be sustained over time as the potential effects of the smoking ban may ‘wear off’. However a national smoking ban should be judged as only one approach to tobacco control. Multifaceted approaches to tobacco control including legislation, fiscal and educational components are considered most effective for reducing smoking prevalence [24,25].

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Contributors

All authors reviewed and approved the final version of this manuscript.

BJM participated in the research design, was involved in and coordinated all aspects of the Cork study, preparation of study materials and protocol, data collection, data entry/ editing, performed most of the analyses, and wrote all of the drafts of the paper. BAG conceptualized the research design, was involved in all aspects of the Cork study and protocol, interpretation of the data analysis, and in the preparation of drafts of this manuscript. SA conceptualized the study, devised the study materials and overall protocol, was involved in and coordinated all aspects of the study and data collection, participated in interpretation of the data and in the preparation of drafts of this manuscript. GP participated in the research design, data cleaning, interpretation of the data, and in the preparation of drafts of this manuscript. IJP participated in the research design and commented on drafts of the manuscript.

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Conflicts of interests

SA is a member of the Board of the Irish Office of Tobacco Control (unpaid position). IJP is the unpaid chair of the Irish Research Institute for a Tobacco Free Society.

Ethical approval

The clinical research ethics committee of the Cork Teaching Hospitals.

Key points

- The reduction in cigarette consumption among bar workers and the decline in smoking prevalence among the equivalent groups in the general population provide some evidence that the Irish smoke-free workplace legislative was effective as a tobacco control measure.
- Multifaceted tobacco control efforts need to continue in Ireland to build on the positive implications of this legislation on smoking prevalence.

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Table I: Baseline characteristics of Cork bar workers followed up post-ban (n=107) and bar workers lost to follow-up (n= 22). (Figures are n (%) unless otherwise specified.)

	Bar workers n=107	Bar workers lost to follow-up n=22
Sex		
Male	76 (71%)	13 (59%)
Mean age in years (SD)		
Total	33.2 (12.1)	30.69 (12.31)
Males	33.3 (11.6)	31.30(12.17)
Females	32.8 (13.5)	29.80 (13.2)
Age Group		
18-28 yrs	53 (49.5)	12 (54.5)
29-38 yrs	24 (22.4)	6 (27.3)
39-48 yrs	18 (16.8)	1 (4.5)
49-58 yrs	7 (6.5)	2 (9.1)
>59yrs	5 (4.7)	1 (4.5)
Occupational Class		
‘Manager’(Bar owner/ bar manager)	45 (42)	12 (54.5)
‘Staff’ (Permanent/Temp bar workers)	62 (58)	10 (45.5)
Self reported smoking status		
Regular /Occasional smoker	52 (48.6)	15 (68)
Ex smoker/ Never smoked	55 (51.4)	7 (32)
Combined self report and cotinine *		
Smoker	55 (51.4)	15 (68)
Non-smoker	52 (48.6)	7 (32)

* 24 out of the 107 (post ban samples) and 4 out of the 22 (lost to follow-up sample) are missing cotinine values

Table II: Changes in smoking prevalence (n=107; self-reported and combined self report and cotinine) and cigarette consumption per day (n=49) among Cork bar workers; pre- and post- ban comparisons

		<u>Smoking Prevalence</u>				<u>Cigarette Consumption</u>				
		Total	Pre-ban	Post- Ban	Difference	N	Pre-ban	Post- Ban	Within subject changes	Between Subject
					from pre- to				(pre- vs post-ban)	differences
			N (%)	N (%)	post-ban		Mean	Mean	P†	P**
			smokers	smokers	P value*		(SD)	(SD)		
Current smoker (self report)		107	55 (51.4)	52 (48.6)	0.508	49	18.1 (11.8)	13.9 (8.5)	<0.001	-
Current smoker (combined self report & cotinine)		107	60 (56.1)	55 (51.4)	0.125	-	-	-	-	-
Sex	Male	76	39 (51.3)	35 (46.1)	0.22	32	18.2 (11.7)	14.2 (8.2)	<0.001	0.823
	Female	31	21 (67.7)	20 (64.5)	1.00	17	17.8 (12.4)	13.3 (9.3)		
Age Group	18-28 yrs	53	38 (72.0)	35 (66.0)	0.38	30	14.8 (6.9)	12.5 (7.7)	0.001	0.20
	29-38 yrs	24	12 (50.0)	11 (45.8)	1.00	10	23.6 (15.8)	14.6 (10.2)		
	39-48 yrs	18	7 (38.9)	7 (38.9)	1.00	7	23.4 (18.5)	18.4 (9.9)		
	49-58 yrs	7	2 (28.6)	2 (28.6)	1.00	2	20.0 (14.1)	15.0 (7.0)		
	>59yrs	5	0 (00.0)	0 (00.0)	-	0	0	0		
	Occupational class									
Manager (Bar owner/ bar manager)		45	19 (42.2)	18 (40.0)	1.00	17	17.0 (13.0)	13.0 (9.4)	<0.001	0.617
Staff (Permanent/Temp bar workers)		62	41 (66.1)	37 (59.7)	0.22	32	18.6 (11.3)	14.3 (8.2)		

*P values for smoking prevalence were calculated using Mc Nemar chi squared test.

†P values for cigarette consumption were calculated using GLM

Table III Changes in self reported smoking prevalence among the Republic of Ireland general population sub-sample; pre- and post- ban comparisons

	Pre-ban		Post-ban		Difference from pre- to post- ban	
	Total	n (%)	Total	n (%)	P value*	95% CI
Current smoker (self report)	1240	351 (28.3)	1221	303 (24.8)	0.055	0.000 – 0.07
Gender						
Male	619	180 (29.1)	585	135 (23.1)	0.02	0.01 – 0.11
Female	621	171 (27.5)	636	168 (26.4)	0.66	-0.04 – 0.06
Age Group (years)						
18-28 years	184	67 (36.4)	188	50 (26.6)	0.05	0.004 – 0.19
29-38 years	215	85 (39.5)	212	76 (35.8)	0.49	-0.06 – 0.13
39-48 years	243	73 (30.0)	241	76 (31.5)	0.77	-0.10 – 0.07
49-58 years	214	66 (30.8)	210	48 (22.9)	0.08	-0.004 – 0.16
>59 years	384	60 (15.6)	370	53 (14.3)	0.68	-0.04 – 0.06
Occupational Class						
Manager (Bar owner/ bar manager)	563	172 (30.6)	543	136 (25.0)	0.04	
Staff (Permanent/Temp bar workers)	677	179 (26.4)	678	167 (24.6)	0.46	0.002 – 0.11
						-0.03 – 0.06

*P values were calculated using Pearson's chi square

Table IV Changes in self reported cigarette consumption per day among the Republic of Ireland general population sub-sample (smokers only), pre- and post- ban comparisons

	Jan to March 2004		Jan to March 2005		Pre- to one year post-ban change	
	Pre-ban n=342*		(one year post-ban) n=299†			
	Total	Mean (SD)	Total	Mean (SD)	Mean Difference (CI)	p‡
	2004		2005			
Smoker	342	16.9 (9.8)	299	16.0 (8.4)	-0.95 (-0.5 – 2.4)	0.19
Sex Male	175	18.5 (11.4)	132	17.6 (8.9)	-0.85 (-1.5 – 3.2)	0.46
Female	167	15.3 (7.6)	167	14.7 (7.8)	-0.64 (-1.0 – 2.3)	0.45
Age Group (years)						
18-28 years	65	14.7 (10.9)	50	13.3 (7.3)	-1.36 (-2.2 – 4.9)	0.45
29-38 years	83	16.5 (7.3)	74	15.2 (7.3)	-1.30 (-1.0 – 3.6)	0.27
39-48 years	72	18.0 (8.8)	76	16.8 (8.6)	-1.22 (-1.6 – 4.1)	0.39
49-58 years	64	19.4 (12.5)	48	17.8 (10.4)	-1.54 (-2.9 – 6.0)	0.48
>59 years	58	16.1 (9.2)	51	16.9 (8.1)	+0.74 (-4.1 – 2.6)	0.66
Occupational Class						
C2 Manager	169	16.3 (8.4)	135	16.2 (9.0)	-0.03 (-2.0 – 2.0)	0.98
DE Staff	173	17.6 (11.1)	164	15.8 (7.9)	-1.82 (-.02 – 3.9)	0.08

*9 missing values for cigarette consumption among the general population sub-sample pre-ban

†4 missing values for cigarette consumption among general population sub-sample post-ban

‡ p values were calculated using independent samples t-test

Chapter 4

Paper 3:

Smokers still underestimate the risks posed by exposure to second-hand smoke; repeated cross sectional among the Irish population

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Abstract

Background

Research suggests that the accuracy of risk estimates varies by smoking status, with smokers usually estimating the risks of active smoking lower than non-smokers. Smokers tend to underestimate their personal risk of being harmed by smoking, known as “optimism bias”.

The extensive media coverage and public discussion concerning the harmful effects of second-hand smoke (SHS) around the introduction of Irish smoke-free workplace legislation are likely to have impacted on the Irish general population’s perceptions of the health risks associated with SHS. Although there is much documented research on the influence of smoking status on the accuracy of risk perception associated with active smoking, little is known about the association with exposure to SHS.

Methods

This study involves two repeated cross sectional (2-stage cluster sampling; telephone survey) samples of Irish adults in 1999 (n=1240) and 2006 (n = 1000). As a guide for an ‘expert’s’ risk perception of SHS, a representative sample of GPs (n=248) were sampled in 2006. Participants were asked to consider whether a non-smoker, exposed to SHS, is at an increased risk of asthma, lung cancer, heart disease, bronchitis, diabetes and ear infections in children.

Results

From 1999 to 2006 there was a significant increase in the general population’s understanding of the risks posed by SHS for asthma, lung cancer, heart disease and bronchitis. Of particular concern was the lack of knowledge among the general population in 1999 and in 2006 of the role SHS exposure has in the development of ear infections in children (45% in 1999 and 46% in 2006 compared to 81.5% among our expert group of GPs). With the exception of females and those aged between 50-64 years, no significant improvements were seen in perception of this risk since 1999. With the exception of ear infections in children (2006), the risk perception of

all diseases differed significantly by smoking status, as smokers' awareness of the risk posed by SHS exposure was significantly lower. Relative to smokers, non-smokers had 2.35 (95% CI 1.44-3.83) and 1.9 (95%CI 1.21-3.05) times the odds of identifying SHS as a risk factor for lung cancer and bronchitis respectively while adjusting for main confounders. However encouraging results suggest that the knowledge deficit between smokers and non-smokers has decreased as smokers understanding of the risks of SHS increased between 1999 and 2006.

Conclusion

Knowledge of risks associated with SHS exposure has improved, as has the knowledge deficit between smokers and non-smokers. This research points to an alarming lack of awareness among the general population of the risk posed by SHS exposure to a vulnerable subset of our population- our children. This knowledge deficiency needs urgent attention by the Irish government.

Key words: Risk perception, second-hand smoke, smoke-free workplace legislation

Introduction

Health risks posed by active smoking are well documented as are the perceptions of these risks [169]. For example, Power *et al.*, 2004 [170] found that the Irish general population are well aware of the dangers of active smoking but underestimate the importance of smoking relative to other external causes of death. Accuracy of risk estimates has been found to vary by age [171-173] and smoking status, with smokers usually underestimating the risks of active smoking compared to non-smokers (optimistic bias).

Risk perception of the harmful effects associated with smoking was identified as one of the major factors for smoking cessation [174]. Research on the accuracy of risk perception of smoking is highly controversial. For example, based on US survey data, Viscusi [175] has argued that people generally overestimate the risks of smoking and that the decision to smoke is largely based on a rational appraisal of risks and benefits. This is vigorously disputed. There is data from other studies [176-178] including the UK [172] to suggest that people underestimate both the risk of addiction and long-term health risks of smoking. Research suggests that some health risks of smoking, such as lung cancer, are well recognized; however, other risks to health outcomes are underestimated [176].

The health risks of second-hand smoke (SHS) have been well documented and include asthma [12-14], lung cancer [7, 179-180], heart disease [8-9, 181-183], bronchitis [10-11], development of ear infections among children [16-17] and some evidence on diabetes [184-186]. Similar to active smoking, risk perception of SHS has been found to vary by smoking status with smokers underestimating most of the risk attributed to SHS [138, 187-189]. Research exists on knowledge and perceptions of risks posed by second-hand smoke with an abundance of research among adolescents. However few studies examine the risk perception of SHS in any depth or look at changes in risk perception over time.

In Ireland the risks posed by SHS exposure have received substantial attention in the recent years in Ireland with changes in health warnings on cigarette packs, proposed introduction of graphic labels on cigarette packs and most notably the introduction of the smoke-free workplace legislation. It is likely that the extensive media coverage and public discussion about harmful effects of smoking during the period leading up to and since the implementation of the ban contributed to an increased awareness of risks posed by SHS among the Irish population.

General practitioners play a crucial part as role models for health behaviours, communicators of health messages and have an important role in smoking cessation advice delivery. As research suggests, beliefs and attitudes of tobacco-dependent health care professionals might be one limiting factor in the delivery of effective smoking cessation interventions [190-191].

This research forms part of the Smoke-free Ireland study (SmofrI study). In this study, we examined changes in perception of risks posed by SHS in the Irish general population over the past 7 years, and compared current risk perceptions of an expert group of Irish General Practitioners (GPs) to the general population. We investigated personal characteristics associated with knowledge of risks posed by SHS exposure; focusing specifically at two risk outcomes. Firstly, lung cancer as the most recognised risk of both active and SHS exposure and secondly, ear infections in children as a largely unknown risk.

This paper assesses trends in the perception of the risks posed by SHS by the Irish general population over the last 7 years and considers if smokers continue to underestimate the risks posed by SHS smoke exposure compared to non-smokers.

Methods

Two separate datasets were used in our analysis, the first dataset consisted of two repeated cross sectional (telephone survey) samples of Irish adults in 1999 and 2006 ($n \cong 1000$, quota sampling). The second consisted of a representative sample of GPs from Cork & Kerry ($n=248$) in 2006.

Sample selection

General population

A national cross-sectional telephone survey was conducted with a representative sample of the general population drawn using quota sampling yielding 1,247 individuals in 1999. This was attached as a module to the Economic and Social Research Institute (ESRI) survey of economic and lifestyle issues conducted in March 1999 [170]. A second cross-sectional sample of the general population was generated ($n=1,000$, aged 15 years plus) in 2006. The same questionnaire was administered via a telephone survey conducted by TNS mrbi. In both studies participants were selected based on randomly generated phone numbers; targets were met in relation to sex, age, occupational class and region. Weighted data, to adjust for sample over- or under-representation of region (Dublin, Munster, Connacht/Ulster, ROI) social class, gender and age group (15-34; 35-54; 55+), was used in all analyses of the general population.

General Practitioners

Data from GPs was obtained from a telephone survey conducted by trained interviewers in 2006 ($n=248$ 80.7% follow-up sample of GPs; 69.5% for new sample of newly qualified GPs) within the Department of Epidemiology & Public Health. The baseline sample was completed in 1999 [170] which included a representative sample of 200 GPs (171 responses, 85% response rate) drawn from a list of all GPs practising in the Southern Health Board region, comprising Counties Cork and Kerry. This group of GPs was followed-up. A second group of GPs recruited, to represent younger GPs; these were randomly selected from a list of recently

qualified (within the past 7 years) GPs. Both samples were combined for the purpose of the current study.

Measures

Sociodemographics & smoking behaviour

Participants from the general population were asked about their sex, age group, occupational class, marital status and level of education completed. GPs were asked about their year of qualification as a marker for age and their sex. Each participant was asked about their smoking status. Smokers were defined as someone who self-reported to currently smoke on a regular basis or currently smoke on an occasional basis. Daily cigarette consumption and quitting history were also assessed.

Risk perception of second-hand smoke

Risk perception was assessed using the question '*I would like you to indicate whether a non-smoker who regularly breathes in someone else's smoke increases the risk of a non-smoker getting*' each of the following: asthma, lung cancer, heart disease, bronchitis, ear infections in children, diabetes. Respondents were asked to indicate whether the particular exposure '*increases risk*' or '*does not increase risk*' of disease for a non-smoker. Those who either refused to answer the question or answered 'don't know' were re-classified as 'does not increase risk'

Sample demographics

General Population

Due to the sampling strategy employed and weighting used, both general population samples were considered, to be representative of the Irish general population in 1999 and 2006.

General Practitioners

Fifty eight percent (n=144) of the GPs were male, 8% (n=19) self-reported to be current smokers while 29% (n=71) self-reported to be ex-smokers. The median number of cigarettes consumed by smokers was 30 (IQR = 90).

The Irish College of General Practitioners (ICGP) holds membership with over 90% of GPs in Ireland. The ICGP provided a gender and age profile of their membership; which was comparable to the Cork & Kerry GP sample. Weights derived from the ICGP information were used in the analysis. The results were unaffected by these weights; therefore un-weighted data were used.

Statistical analysis

Data analysis was conducted using SPSS 12.0.1 (SPSS, Chicago, IL). Pearson's chi square tests were used to examine differences in risk perception of SHS within each sub-group (sex, age group, marital status and education) between 1999 and 2006 in the general population.

Binary logistic regression was used to adjust for possible confounding and estimation of the risk posed by SHS. Data were adjusted for age category, gender, education, employment status (employed vs. not currently employed) and marital status. As is evident in other research, smoking status [171, 187-189] and age [171-172, 192] are significant factors in the estimation of risks posed by active smoking and SHS. Level of education, employment and marital status may also be considered important in risk perception of SHS. Where applicable adjustments were made to account for differences in socio-demographics and smoking status between the 1999 and 2006 general population samples; these differences are considered a true reflection of the change in the Irish population over this time period.

Results

Differences in risk perception of second-hand smoke among the general population from 1999 to 2006

Table I outlines differences in perceived risk of SHS exposure on disease within the general population from 1999 to 2006 compared to perceptions in an expert group of General Practitioners (2006). Significant increase in the general population's understanding of the risks posed by SHS can be seen for asthma, lung cancer, heart

disease, bronchitis, and a significant decrease for those who identify SHS as a risk for diabetes.

Comparison to General Practitioners

In comparison to the general population (2006), GPs estimated the risk posed by SHS to be similar for asthma and higher in all other diseases except diabetes (28%:10% in the general population and GPs respectively) (Table I). The starkest contrast can be seen within ear infections in children with 81.5% of GPs compared to 46% of the general population believing that SHS exposure increases a child's risk of ear infections.

Comparisons between smokers and non-smokers

As expected, fewer smokers were aware of the risks of SHS than non smokers. However the disparity in risk perception between smokers and non-smokers narrowed from 1999 to 2006 with most notable differences seen for heart disease of 15.4% in 1999 reducing to a difference of 5.6% in 2006, similar changes are seen for lung cancer (14.1% to 7.6%) and bronchitis (10.4% to 5.7%). Awareness of ear infections in children increased but not significantly with no change in disparity between smokers and non-smokers from 1999 to 2006 (7%).

Awareness of increased risk in all diseases was influenced by smoking status, with smokers underestimating the risks posed by SHS significantly in both study periods (Table II). Adjusting for gender, age, marital status, employment status and education made only small changes to the odds ratios. Smokers had a lower perception of all the risks posed by SHS in comparison to non-smokers, with ear infections in children in 2006 the only risk found to be non-significant. Non-smokers had 2.35 (95%CI 1.44-3.83) and 1.9 (95%CI 1.21-3.05) times the odds of identifying SHS as a risk factor for lung cancer and bronchitis than smokers respectively.

Risk perceptions of lung cancer and ear infections in children; changes from 1999 to 2006

Lung cancer is one of the most commonly recognised risks of SHS exposure (93% of the general population in 2006). However less than half (46%) of the general population were aware of the risks SHS exposure produces for a vulnerable group like children. This awareness has been unchanged since 1999 (45%) and it was the only risk perception examined in this study which was not significantly influenced by smoking status.

For a more in-depth understanding we examined some of the individual factors associated with the awareness of lung cancer risk and the non-awareness of ear infections in children among the general population.

Lung cancer

Table III details significant improvements in awareness of risk of lung cancer due to SHS exposure for both genders, all marital status groups, both educational groups and all age groups except among the >65 year olds. Significant differences in awareness of this risk by age can be seen in both 1999 and 2006; the youngest age group (16-29 years) reported the largest agreement in both 1999 (90%) and 2006 (96%).

Ear infections in children

Table III demonstrates that females and those aged between 50 to 64 years increased their perception of risk of SHS exposure posed to children from 1999 to 2006. Surprisingly those who were married and those with higher levels of education had not increased their awareness since 1999. Only 50% of participants who were single in 1999 perceived that SHS exposure posed a risk of ear infections in children and worryingly this actually decreased non-significantly in 2006 to 44.5%.

Discussion

The majority of the general population in both 1999 and 2006 were aware of the risk posed to others due to SHS exposure. From 1999 to 2006 understanding of the risks posed by SHS increased significantly among the general population for all diseases except ear infections in children and significantly decreased for diabetes.

This research adds to a body of evidence on smokers' awareness of the risks posed by active and SHS exposure compared to non-smokers. This investigation demonstrated again that smokers significantly underestimated the risk associated with SHS compared to non-smokers; even while controlling for a number of possible confounders (with the exception of ear infections in children in 2006). It cannot be determined from this research whether it is the smoker's denial of information or lack of information which accounted for these misunderstandings. Encouraging evidence from this research demonstrated that the disparity in risk perception of SHS between smokers and non-smokers is narrowing with most notably improvements in knowledge seen for heart disease, lung cancer and bronchitis.

Members of the general public and GPs attribute similar weight to most of the risks associated with SHS with the important exception of ear infections in children. Our expert group of GPs appreciated (81.5%) the relationship between SHS exposure and increased risk of ear infections in children. Worryingly in 1999 and 2006 less than half of all general population respondents correctly identified SHS as a risk factor for ear infections in children. This highlights an immense gap in the general population's understanding of the risk posed by SHS to children. From our study, it was surprising that those who were married (who are most likely to have children) and those with higher levels of education did not show any improvements in this awareness over time. It would be expected that health messages are generally found to be more effectively received among the most educated and economically advantaged groups in a society. To the best of our knowledge this is the only study to examine risk perception of SHS on ear infections in children.

Despite concerns that the ban would result in a displacement of smoking from the pub to the home, research suggests either an increase in the number of voluntary smoking restrictions resulting in reduced SHS exposure in the home in Ireland [60], New Zealand [193] and Scotland [194] or no change [58, 195]. The true significance of the potential impact of SHS exposure on children's health may not have been articulated by health information campaigns and is an area of particular note for future health campaigns in Ireland.

A number of studies have examined the perception of non-specific risk associated with SHS, for example; 'Is smoke from other people's cigarettes harmful to you?' [196] and 'A smoky work environment is harmful to my health' [188]. However, few provided a suitable comparison with this research due to differences in questions asked or sample characteristics. A study among American adolescents [189] outlined the specific risks attributable to SHS exposure of asthma, lung cancer, heart attack and having trouble breathing. In comparison to our research, adolescents were less aware of the risk of asthma (54% of smokers; 43% of non-smokers), compared to our data (87% of smokers; 92% of non-smokers) and of the risk of lung cancer (36% of smokers and 47% of non-smokers) compared to our data (87% of smokers; 95% of non-smokers or 96% of 16-29 years olds). These differences are surprising as research among adolescents on active smoking suggests that adolescents attribute higher risk than adults to active smoking [171]. These differences may be partially explained by cultural differences or differences in sampling. Another factor may be that adolescents lack personal experience and therefore, do not appreciate the health risks of passive smoking.

In New Zealand, Jones [138] assessed the perception of specific risks associated with SHS and asthma, cancer and stroke in 1999. Their findings are comparable to our 1999 general population data with 80% agreeing that SHS increases the risk of asthma in New Zealand compared to 83.5% in Ireland. Unfortunately no other comparisons could be made with this research. It should also be noted that Jones *et al.*, examined the risk perception of an occupational group of bar and restaurant

workers exposed to high levels of SHS, who may respond differently than a general population sample due to this exposure.

The findings from this research span 7 years, encompassing the introduction of the smoke-free workplace legislation and other tobacco control measures. Therefore, we cannot provide insight into the specific contribution the ban has had on changes in risk perception of SHS exposure.

Limitations

Diabetes was initially included as a potential indicator of false positive responses reflecting generalised concerns regarding the effects of smoking. Unfortunately it was a poor choice as there are genuine, albeit relatively small and recently identified effects of smoking on risk of diabetes. Differences in the proportion of the general population attributing risk of diabetes due to SHS exposure compared to the expert group of general practitioners were as expected. GP's who are familiar with the major and well publicised hazards of smoking would be expected to "underestimate" the risks associated with diabetes whereas members of the general public who are sensitised to the dangers of smoking will be more likely to associate smoking with diabetes. In 1999 this association was mainly unknown and only in recent years supporting evidence has emerged. Two studies point to a relationship between SHS exposure and increase risk of developing glucose intolerance [185] (a precursor of diabetes) and diabetes [186] . To our knowledge, these are the only studies linking SHS exposure and diabetes and we suspect, as confirmed by our expert group, this possible relationship would not be widely recognised. Our findings related to diabetes are therefore difficult to interpret. It is unclear if the general population overestimated the risk attributable to SHS exposure in this case and it cannot be ruled out if the participants used the same overestimation for other risk factors, however we consider this unlikely. It may be the case that the general population would consider the risks posed by SHS exposure so grave that it is conceivable to be linked with any adverse health outcome.

Although improvement in awareness of risks posed by SHS exposure is encouraging this knowledge may not be expressed in behaviour beliefs or practices [197]. Based on our findings we cannot therefore assume that smokers behave more considerately around non-smokers or that non-smokers avoid exposure to SHS due to increased awareness of the health risks. Further research is needed to examine the relationship between knowledge and the absolute and cumulative risk of SHS and the role optimistic bias may have in perception of risks posed by SHS exposure.

Implications

This study summarises improvements in risk perception of SHS exposure over time within a country with advanced tobacco control measures. It outlines improvements in the knowledge base of the general populations related to risk of SHS exposure and encouraging evidence of a narrowing knowledge gap between smokers and non-smokers. However, this research does point to an alarming lack of appreciation among the general population of risk posed by SHS exposure to a vulnerable subset of the Irish population: children. This knowledge deficiency needs urgent attention by the Irish government and perhaps an opportunity exists, for legislation to restrict children's exposure to SHS. Growing support for smoke-free cars is evident elsewhere. Recent evidence pointing to support for laws requiring cars that contain children to be smoke free, with support from smokers at 77% or more [198].

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Contributors

All authors reviewed and approved the final version of this manuscript.

BJM participated in the research design, was involved in and coordinated all aspects of the study, prepared study materials, protocol, data collection, data entry/ editing,

performed most of the analyses, and wrote all of the drafts of the paper. BAG and IJP conceptualized the research design, was involved in all aspects of the study and protocol, interpretation of the data analysis, and in the preparation of drafts of this manuscript. SM participated in the research design, preparation of study materials and protocol, data cleaning and in the preparation of drafts of this manuscript. BP, HC participated in the research design and commented on drafts of the manuscript.

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Conflicts of interests

IJP is the unpaid chair of the Irish Research Institute for a Tobacco Free Society.

Ethical approval

The clinical research ethics committee of the Cork Teaching Hospitals.

Table I: Difference in perceived risk of SHS on disease by smoking status within the General Population from 1999 to 2006 in comparison to perceived risk among General Practitioners in 2006

	General population						Overall P*	General Practitioners
	<u>1999 (n=1240) Yes N (%)</u>			<u>2006 (n=1000) Yes N (%)</u>			Difference	Yes (n=248)
	Smoker	Non-smoker	Total	Smoker	Non-smoker	Total	1999 to 2006	N (%)
Asthma	263 (76.7)	774 (86.2)	1036 (83.5)	233 (87.3)	676 (92.2)	909 (90.9)	<0.001	224 (90.3)
Lung cancer	254 (74.1)	791 (88.2)	1045 (84.3)	233 (86.9)	693 (94.5)	926 (92.6)	<0.001	239 (96.4)
Diabetes	95 (27.8)	332 (37.0)	427 (34.4)	64 (23.9)	216 (29.5)	280 (28.0)	0.001	25 (10.1)
Heart Disease	209 (60.9)	685 (76.3)	893 (72.0)	220 (82.1)	643 (87.7)	863 (86.2)	<0.001	222 (89.5)
Bronchitis	269 (78.7)	799 (89.1)	1068 (86.1)	233 (87.3)	681 (93.0)	914 (91.4)	<0.001	241 (97.2)
Ear infections	137 (39.9)	420 (46.8)	557 (44.9)	110 (41.2)	353 (48.2)	463 (46.3)	0.52	202 (81.5)

* p value from chi-square using 'yes' vs. rest ('no' and 'don't know')

Table II: Binary logistic regression for risk perception of SHS within the General population in 1999 and 2006 by smoking status

	General Population 1999 n=1,209						General Population 2006 n =951					
	Crude OR	95%CI	P	OR*	95%CI	P	Crude OR	95%CI	P	OR*	95%CI	P
Asthma	1.83	1.33-2.52	<0.001	1.98	1.42-2.76	<0.001	1.70	1.07-2.68	0.02	1.66	1.04-2.66	0.03
Lung cancer	2.50	1.82-3.45	<0.001	2.71	1.95-3.78	<0.001	2.35	1.44-3.83	0.001	2.81	1.68-4.69	<0.001
Diabetes	1.55	1.17-2.04	0.002	1.64	1.24-2.17	0.001	1.37	0.98-1.90	0.06	1.42	1.01-1.98	0.04
Heart disease	2.11	1.61-2.77	<0.001	2.15	1.63-2.83	<0.001	1.50	1.02-2.21	0.04	1.54	1.03-2.31	0.03
Bronchitis	2.17	1.54-3.04	<0.001	2.25	1.59-3.19	<0.001	1.92	1.21-3.05	0.006	1.88	1.17-3.01	0.009
Ear Infections	1.35	1.04-1.74	0.023	1.43	1.10-1.86	0.007	1.23	0.92-1.64	0.16	1.25	0.93-1.68	0.14

* Odds Ratio was adjusted for age category, gender, education, employment status (employed vs. not currently employed) and marital status

Table III: Difference in perceived risk of SHS on lung cancer and ear infections in children within the General Population from 1999 to 2006; differences in proportion answering yes ‘increases risk’.

			General Population			P Difference
Lung cancer		1999 n (%)	P	2006 n (%)	P	1999 to 2006
Gender	Males	504 (86.0)	0.13	458 (92.9)	0.72	<0.001
	Females	541 (82.7)		467 (92.1)		<0.001
Marital status	Married	480 (81.8)	<0.001	480 (91.4)	0.32	<0.001
	Single	420 (89.6)		350 (94.1)		0.030
	Widowed	130 (78.8)		90 (91.8)		0.009
Education	≤Leaving cert	840 (83.8)	0.44	511 (92.4)	0.98	<0.001
	Third Level	205 (86.1)		391 (92.7)		0.010
Age	16-29	347 (89.9)	0.003	252 (96.2)	0.01	0.003
	30-49	372 (81.6)		346 (93.0)		<0.001
	50-64	183 (81.3)		208 (89.3)		0.023
	>65	142 (82.1)		91 (88.3)		0.165
Ear Infections						
Gender	Males	265 (45.3)	0.82	207 (42.0)	0.008	0.300
	Females	291 (44.5)		256 (50.5)		0.050
Marital status	Married	249 (42.4)	0.05	247 (47.0)	0.72	0.140
	Single	233 (49.7)		165 (44.5)		0.150
	Widowed	70 (42.7)		46 (47.4)		0.540
Education	≤Leaving cert	446 (44.5)	0.60	249 (44.9)	0.66	0.900
	Third Level	111 (46.6)		197 (46.6)		1.000
Age	16-29	195 (50.5)	0.01	117 (44.8)	0.74	0.180
	30-49	206 (45.3)		177 (47.5)		0.580
	50-64	87 (38.7)		113 (48.5)		0.040
	>65	67 (39.0)		44 (43.1)		0.580

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Chapter 5

Paper 4:

**De-normalisation of smoking, stigma and subsequent adaptation:
consequences of the smoke-free workplace legislation in Irish Pubs
for smokers and non-smokers– a qualitative study**

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Word count is 13,122

Abstract

Background

The introduction of the smoke-free workplace legislation in the Republic of Ireland in March 2004 and the regulation of the risk and danger posed by second-hand smoke (SHS) may have contributed to the process of de-normalisation of smoking. Tactics to de-normalise smoking usually attempt to discourage new smokers from starting and encourage current smokers to reduce consumption and even quit. These strategies, whether intentionally or not, may also intensify the stigmatisation and marginalisation of smokers and smoking behaviour. To date little attention has been given in tobacco scholarship to the drivers of de-normalisation and social unacceptability of tobacco use [26].

The main aim of this research was to explore the various responses of smokers and non-smokers to the smoke-free legislation including smoking behaviour change. We examined the components of stigma as conceptualised by Link & Phelan [199] as a framework to provide insight into the possible intensification of smoking as a stigmatised behaviour specifically in the context of the pub.

Methods

A thematic analysis of semi-structured interviews was conducted among a purposive sample of 18 male and female smokers, ex-smokers and never smokers aged between 22 and 45 years four years after the implementation of the smoke-free legislation (May- August 2008). Link and Phelan [199] conceptualisation of stigma consists of 6 components; label, stereotype, status loss, discrimination, power and separation.

Findings

The majority of smokers and non-smokers agreed with the smoke-free legislation. Initially, there was a heightened visibility of smokers which diminished for some as smoking facilities in pubs improved and the norm of smoking outside became established. This research confirmed the existence of perceived stigma for smokers and their behaviour. However, it also highlights the dynamic nature of stigmatisation and de-normalisation in a society where both smokers and non-smokers adapt to the

new norms, develop new cultures, and some Irish publicans adapted to the legislation by creating very comfortable smoking facilities.

Evidence of stigma existed across all components outlined by Link and Phelan. However, separation of smokers into designed smoking areas emerged as particularly important in the context of the smoke-free legislation. The stigma created by separation was dependent on a number of factors but, mostly centred on the quality of the smoking areas. This separation and increased de-normalisation of smoking in society has consequences for smoking behaviour. Depending on facilities and the attitudes of others around them, smokers decreased their smoking by rushing their cigarettes or smoked less. However, there is also evidence of a new pub culture with comfortable smoking facilities that encouraged smokers to find a comfortable place and continue to smoke at pre-law levels.

The ban had consequences not only for smokers but also for non-smokers. Non-smokers play a role in the creation of a new smoking culture. Non-smokers in some instances were empowered to exile smokers while others showed compassion to smokers, considered it a choice if they as non-smokers were exposed to SHS and some shared in experiencing 'smirting' in the smoking area.

Conclusions

Evidence for intensification of the stigma of smoking owing to the Irish smoke-free legislation was mixed. Some of our data supported the notion of increased stigma as a driver for further de-normalisation of smoking. On the other hand, felt stigma of smoking was not apparent, especially when smokers and non-smokers adapted to the new norms and circumstances. From a public health perspective the inconclusive evidence for increased stigma felt by smokers is encouraging, perhaps de-normalisation of smoking intensified without further intensification of stigma. More discussion of the ethical implications of stigma is needed.

The proliferation of 'good' smoking areas may have reduced the effect potential of the legislation on smoking behaviour. In addition, the evidence of the willingness of non-smokers to occupy these 'smoking islands' is also of concern. Tobacco control would require that smoking areas remain intrinsically unattractive for both smokers and non-smokers; to address this the Irish government would need to tighten regulations and to enforce current regulations on smoking facilities. These efforts

may further de-normalise smoking behaviour and prevent glamorisation of smoking and smoking areas.

Key words

Smoke-free legislation, stigmatisation, smoking areas, smoking behaviour, tobacco control

Introduction

The introduction of the smoke-free workplace legislation in the Republic of Ireland in March 2004 and the regulation of the risk and danger posed by second-hand smoke (SHS) may have intensified the process of de-normalisation of smoking, however may also have contributed to the creation of individuals as targets for social exclusion [99, 200]. Smoke-free laws have been shown to reduce cigarette consumption and increase quitting rates [1-3, 41, 46-47, 201]. However, little is known about the social impact of such legislation and the ways in which it may or may not increase the de-normalisation of smoking.

The smoke-free legislation in Ireland was implemented at a time when smoking prevalence had been in almost continual decline in westernised countries since the 1970's. Increased individual awareness of health consequences of smoking and other policy measures to de-normalise smoking in society have been hypothesised as the major factors in the decline at a population level. From a public health perspective and based on the social ecological model, smoking is more than an individual behaviour choice; it is influenced by a multitude of factors in society. Smoking is a social behaviour and reflects a host of cultural norms and meanings. It is of particular social significance in the pub where it can provide pleasure, relief from stress and play a role in social identity (glamour/ attraction/ rebelliousness).

Research has shown that some smokers felt they changed their smoking behaviour because of the smoke-free legislation [60, 65, 201-204]; others ignored or resisted [205] the incentive to quit while some retreated from the public realm [71].

Public health has, in recent years, embraced strategies to de-normalise smoking particularly by placing emphasis on health risk posed by SHS to non-smokers. Tactics to de-normalise smoking may discourage new smokers from starting and may encourage current smokers to reduce consumption and even quit. These strategies, whether intentionally or not, may also intensify the stigmatisation and marginalisation of smokers and smoking behaviour. To date little attention has been given in tobacco scholarship to the drivers of de-normalisation and social unacceptability of tobacco use [26].

Stigmatisation of smoking, has been suggested as one of the mechanisms of de-normalisation [26], resulting in negative feelings and thoughts towards smokers and internalised feelings of guilt and shame among smokers [71]. Chapman and Freeman [26] identify what they posit as markers (evident in the Australian context) of how smokers' identities have been "spoiled" because of tobacco control measures. The authors argued that in public settings smokers are "exiled" from others to designated areas, which contribute to feelings of "otherness" amongst smokers and induce the identity of social "lepers". Alternatively, as suggested by Hilton *et al.*, [206] smokers may join outside for a common purpose and not feel 'exiled'. Furthermore, as Goffman [88] observed, stigmatised smokers may seek each other out and form 'shamed groups'. It has been argued that, because of designated smoking areas, smokers do not feel stigmatised but feel they are 'good citizens' by not exposing others to SHS, thereby alleviating some of the perceived stigma [205]. Or perhaps, Irish citizens were so accustomed to tobacco control measures that they were desensitised to new efforts to 'stigmatise' smoking.

Stigmatisation, gender and social class

The social gradient of smoking may be an important aspect of interpreting the stigmatisation of smokers and their smoking. It is a well known that those in the most socially and economically disadvantaged classes have higher smoking prevalence and are less likely to quit compared to others. Prior to the introduction of the legislation in Scotland, areas of socio-economic disadvantage were less likely to have smoking policies in place compared to more affluent areas [53] and after its implementation researchers highlighted the provision of less suitable facilities (little or no shelter) for smokers in disadvantaged communities. [53] Therefore, disadvantaged classes may be most affected by the introduction of the legislation.

Social interaction at work [65], within groups [68] and communities [101] is also important in understanding smoking behaviours. The social disapproval of smoking is highly gendered, with pregnant women being amongst the most demonised and disparaged smokers. The smoke-free workplace legislation may create more negative situations for women than for men. A woman may feel intimidated or at risk while in the smoking area of a pub on her own or in the company of strangers. It has been argued that social factors, in this case the smoke-free legislation and the

accompanying social unacceptability of smoking, may be more influential on women's smoking behaviour than on men [207] and that women who smoke are more responsive than men to negative environmental factors [208] such as SHS. Although differential behavioural and social responses will be more likely for women than for men and for different socioeconomic groups, [209] we do not intend to examine the specific different gender or class issues related to the smoke-free legislation in this study.

Conceptual model of stigmatisation

This work has identified stigma among smokers and aspires to identify what, if any, contribution the smoke-free legislation has had on this component of de-normalisation. De-normalisation first appeared in California in the 1990's; these tactics were initially deployed focusing on the tobacco industry's deceptive character and the hazardous nature of their products [210]. Its method, largely endorsed by the Public Health discipline, uses policies and interventions to influence social norms around the tobacco industry and tobacco products [210]. Nowadays, de-normalising policies, including smoke-free legislation, extent far beyond attacks on the industry but have moved towards smokers themselves. Tactics now include how smokers affect others and efforts to exclude smokers from the community. How the intricate relationship between de-normalisation and stigma plays out as result of such public policy must be of importance to public health in many ways including how it may compound existing health inequalities and in terms of smokers accessing cessation services.

Erving Goffman [88] is generally credited as the original writer on stigma. In spite of two decades of intense social science research on the concept of stigma, no commonly agreed definition of stigma has emerged. Indeed, the concept has been criticised for being too vaguely defined and individually focused. In response to these criticisms, Link & Phelan [199] developed and refined the ideas of Jones (*et al.*, 1984)[211] and Goffman [88] and offers a definition of stigma which incorporates an overview of the public health consequences of stigma from a sociological perspective. Their proposed concept of stigma involves the co-occurrence of component parts namely – labelling, stereotyping, separation, status loss, discrimination and power.

Firstly, people distinguish and label human differences. In the second, dominant cultural beliefs link labelled persons to undesirable characteristics— creating a negative stereotype; as Goffman [88] describes ‘from a whole and usual person to a tainted, discounted one’. In the third, labelled persons are placed in distinct categories so as to accomplish some degree of separation of “us” from “them.” In the fourth, labelled persons experience status loss and discrimination. Structural discrimination forms one component of discrimination in Link & Phelan’s [199] conceptualisation of stigma and is of most relevance to the smoke-free legislation. This component of stigma affects the structure around the person, leading the person to be exposed to a host of untoward circumstances. It can present in many forms including, institutional racism among minority groups; a disabling environment; or confinement to disadvantaged settings. In the context of the smoke-free legislation, smoking areas may be considered a stigmatised structural facility for smokers and smoking; these facilities may be poorly resourced and found in undesirable locations. Finally, Link and Phelan’s conceptualisation of stigma is entirely dependent on social, economic and political power and the extent of this power. Tobacco control advocates, trade unions (e.g. Mandate), the general public and many others had a role in executing such power in Ireland in bringing about the introduction of the smoke-free legislation which has real consequences for smokers. It is not clear if the smoke-free legislation, which physically separated smokers, had any impact on the stigma felt by smokers once it was successfully introduced.

The Changing Irish pub culture: Exiling of smokers or emergence of a new smoking culture

Ireland is well known for its ‘pub’ and ‘drink’ culture. The smoke-free legislation led to most publicans adapting their premises to provide smoking areas. This change was predicted to create a new pub culture within Ireland with possible negative outcomes such as a ‘spoilt atmosphere’ and disruption or discontinuity to the social flow [53]. Thompson [205] introduces the term ‘smoking islands’ which, like smoking areas, can be seen as places where smokers are categorised and physically separated (geo-power) into a particular location. It was suggested that these smoking areas and smoking on the streets (if facilities were not available) may have become areas for ‘shamed groups’ [88]. Conversely, it may be argued, instead of ‘exiling

smokers' these smoking areas may become an extension of the pub not solely for the purposes of smoking but also facilitating smoking as a 'social lubricant'. For example a cigarette or a light offered or accepted serves to break the ice' [81] leading to the idea of flirting and smoking (smirting; Hilton *et al.*, [206]) or a 'smokers club' [209]. In addition to providing a 'smokers club', these areas may also be attractive to non-smokers to 'flirt', potentially lowering or removing the stigmatising impacts of being 'put out' for smokers.

Stigma can exist to differing degrees. The labelling can be prominent, which affects the stereotype and degree of separation. Therefore some people may be more stigmatised than others. Research has examined how smokers and smoking behaviour is stigmatised. However, studies which examine stigma in the light of a policy change or specifically national smoke-free workplace legislation are mostly drawing on experiences in Scotland or England [53, 203-204, 206, 212-213]. Understandably, the focus of these studies has been on smokers and ex-smokers. However, this paper attempts to add another dimension by also examining the possible consequences for non-smokers. The introduction of the smoke-free legislation in pubs and restaurants in the Republic of Ireland provided a unique opportunity to explore the social consequences of smoking restrictions and the re-location of smoking to smoking areas in the pub.

The overall aim of the study was to examine whether, and in what ways, the introduction of the smoke-free legislation contributed to de-normalisation and stigmatisation of smoking behaviour. This paper uses the components of stigma as conceptualised by Link & Phelan [199] to guide the analysis regarding the occurrence of stigma and to provide insight into the possible intensification of smoking as a stigmatised behaviour, specifically in the context of the geographical re-location of smoking to smoking areas in pubs. We also examine evidence for changed social behaviour of smokers and non-smokers in these smoking areas and their attitudes towards the smoke-free legislation.

Methodology and Method

A qualitative method of data collection was chosen as it is appropriate to help understand social phenomena in natural settings with emphasis placed on the meanings, experiences, and views of all the participants. Qualitative methods examine the subjective experiences of individuals and help to understand emerging trends in society [108]. We used an interpretative methodology. It centres on the ways in which humans make sense of their subjective reality and attach meaning to it [109]. Individuals lives are considered within their life context and not within a vacuum [109].

Sampling

In order to examine the potential consequences of the smoke-free legislation for smokers and non-smokers in the context of the pub it was important that participants had experience of pub culture before the smoke-free legislation was introduced. Therefore, participants must have lived in Ireland before and after the smoke-free legislation was implemented. We aimed to achieve a purposive sample with gender balance and equal numbers of smokers, ex-smokers and never smokers from any occupational group and from different age groups within the age range 22 and 45 years. Participants had to be at least 22 years old, so as to have experience of being in a pub before the smoke-free legislation (legal age to drink in pubs in Ireland is 18 years plus 4 years since introduction of smoke-free legislation). Restricting the range of viewpoints represented to those of younger people was also justified as changes in their smoking culture are more likely to influence cessation, potentially cause reductions in smoking initiation rates, and perhaps signal a major shift in smoking culture for the future. Older age group's view (aged >45 years), while important in determining the true extent of the impacts of the legislation, are likely to be quite divergent from the age group included here. A separate study and sample would be required to capture the views and experiences of the older Irish adult. In support of this decision Hilton *et al.*, [206] indicated that older men, in particular, had different experiences and challenges due to the smoke-free legislation than younger adults (< 45 years).

Smoking status was determined by self-report. The aim was to reflect the variety of experiences of smokers and non-smokers following the introduction of the smoke-free legislation rather than to lay claim of the prevalence of particular viewpoints.

Several options for recruiting participants were considered and rejected including college campus and at pubs. Mainly for safety reasons the pub was rejected as a recruitment location or for interviews. College campus recruitment would have biased the results as the age range would be very narrow and many participants could potentially be from middle to higher social classes. We decided to recruit participants from the offices of the national training and employment authority (FAS) in Cork city. FAS services typically attract a variety of occupational groups. This training centre is accessed by those currently unemployed and those employed hoping to gain further training. We believed that this sample provided a diversity of views and had the potential to over-represent those from lower social groups whom are more likely to smoke and have access to poor smoking facilities. Agreement was sought from FAS and a link person provided a room and distributed fliers advertising the study via email and in the FAS office. The most successful recruitment process was when either BM or SM were on site at the FAS office and approached participants directly for participation –this approach also helped facilitate a gender and age balance in the candidates recruited. Recruiting from this site gave access to a large volume of people and gave a good chance of recruiting within our required age range. The majority of participants were interviewed in the FAS offices just after recruitment. Participants were recruited via an advertisement which was distributed through an email from FAS, on notice boards in FAS and directly by a researcher while at the FAS offices.

Data collection

Semi-structured interviews were chosen to explore contextual accounts of smoking and participants' experiences of smoking areas since the introduction of the smoke-free legislation. The interviews were conducted between May and August 2008 (4 years after the implementation of the smoke-free legislation). Ethical approval was obtained from the clinical research ethics committee of the Cork Teaching Hospitals. Written information was provided regarding the project and participants were made aware that participation in the study was voluntary. Participants were informed that they would be given a voucher of 40 euro for their time after the interview was completed.

Interviews were conducted (by one of two researchers (BM/SM)), with written informed consent, either in the FAS offices or once recruited at FAS were interviewed later on the university campus. The interviewers were committed public health researchers, and were thus reflective of their personal and professional position regarding smoking and the legislation. They were open to opponents of the legislation and other negative aspects of the legislation.

Eighteen semi-structured interviews were conducted, 9 were male and 9 were female (see table 1). It was difficult to identify ex-smokers who had quit because of the law and our study included only one quitting since the law. This participant had wanted to quit before and not just because of the law. Non-smokers included never smokers and ex-smokers. Ex-smokers were not analysed separately for any particular theme. Interviews were completed until little ‘new’ or saturation was achieved. It was judged by BM, SM & BG that little ‘new’ was emerging after the completion of between the 15th-18th interviews.

Table 1 Characteristics of participants n=18

	<i>Smokers</i>	<i>Ex-smokers</i>	<i>Never smoker</i>	<i>22-33yrs</i>	<i>34-45yrs</i>
Males	5	1	3	7	2
Females	4	2	3	5	4

Table 1 above provides general demographics of the participants. Occupations and/or educational achievements were obtained in some cases after the interview and some were still unknown. Three of the males had college education, three had manual/trade occupations and three had unknown educational or employment history. Six of the women interviewed had a college education, two had manual/trade occupations and 1 was unknown. Age range and college education were not used in the analysis and are presented here for information purposes only.

Interviews were conducted by two researchers (BM and SM) using 1 of 2 topic guides (see appendix 5). A topic guide is used as an outline of key issues and areas of questioning used to guide the interview. It was intended that the same general areas of information were collected from each interviewee; this allowed a degree of freedom and adaptability in gaining information from the interviewee.

A pre-test of the topic guide were undertaken. Since the final version of the topic guide only varied slightly from this pre-test version, we later included these recorded interviews (n=2) in the final analysis. Separate topic guides were generated for smokers and non-smokers.

Development of the topic guide

The topic guides were broadly based on the literature around stigmatisation and de-normalisation of smoking. The literature review did have a specific focus on stigma. However, we feel that, since stigma is considered a component of de-normalisation, we captured both concepts within this work. The main bodies of work explored for development of the stigma aspect of the topic guide were Goffman[88], Chapman & Freeman[26, 214], Poland[214-215], Farrimond & Joffi[209] and Thompson[72]¹. Key words and phrases as identifiers of stigma and de-normalisation were largely informed by these papers. The Link and Phelan conceptualisation of stigmatisation was discovered and applied to the data after collection.

We also included questions we specifically wanted to explore which were generated through the quantitative research, as part of the SmoFrI study published elsewhere on smoking behaviour, risk perception, attitudes towards the legislation etc.

Self reported smokers and ex-smokers were asked to provide a brief history of their smoking and how their behaviour was influenced by the implementation of the smoke-free legislation (both initial and sustained), these data were not collected for non-smokers. The topic guide explored participants'

- 1) attitude to and experiences of the smoke-free legislation in pubs (these were sought chronologically to enable participants to recount their experiences from just before, the time of introduction and since). This included changes in smoking patterns for smokers.

- 2) opinions and attitudes towards smoking and towards other people who smoke (i.e. active and passive smoking) generally and with particular emphasis on the context of the pub. Discussions around and comparisons to other social setting did arise but were not systematically addressed in detail.

¹ Key publications from Ritchie *et al.*, 2010 and Hargreaves *et al.*, 2010 were not published at this time

3) Participants were asked about a range of identifiers of stigma throughout the interview (shame, guilt, regret, uncomfortable, normal, outsider). These identifiers were generated after a literature review.

4) Participants were asked a series of questions to explore changes in pub culture as a consequence of the smoke-free legislation including the new spatial separation (smoking rooms/areas) of smokers from non-smokers. Included were attitudes towards SHS in smoking rooms, 'smirting' and the notion of non-smokers occupying the smoking areas.

Interviews were digitally recorded and then transcribed. In order to protect their confidentiality participants were given pseudonyms to protect their anonymity. The interviews lasted between 30 and 60 minutes. Non-smokers' interviews were generally shorter because a smoking history was not applicable. To maintain confidentiality, the interview tapes and transcripts were placed in a locked drawer, with access available to the research team only.

Analysis

The objective of the study was to examine the experiences of individuals since the introduction of the smoke-free legislation. Therefore, an interpretive methodology was utilised. A thematic analysis, which is an inductive process of data analysis, was carried out [199]. Each interview was read and the topic guide was used as an initial framework.

Link and Phelan's six components of stigmatisation [199] were identified as a useful supplement to the pre-existing identifiers of stigma (shame, guilt, regret, uncomfortable, normal, outsider) which were developed from the literature review. The Link and Phelan components also provided a structure to help identify and interpret the key themes related to the stigma analysis. Each theme was examined separately in relation to smoking and the overlap between the components acknowledged.

The components were: 1) Label, 2) Stereotyping, 3) Status Loss, 4) Discrimination, 5) Power and 6) Separation – separation emerged as the primary theme in relation to the smoke-free legislation. As it was a central theme, the results section focuses on this

component. Sub-themes, which emerged during the process, were created to facilitate the analysis and presentation of the results.

The themes were derived independently by BM and SM and agreed upon within the study group (BM, SM & BG). NVivo 8 software aided in the coding and the development of the themes. Given the small sample size involved, an analysis was done manually in the end. Each theme was examined separately and the overlap between the components was acknowledged and agreed (overlap occurred in particular between SHS exposure in general and when asked about risk perception of SHS). Key themes were identified based on participants' views of smoking and SHS, stigmatisation and exiling of smokers, smoking areas, the smoke-free legislation in general, the pub as a place to socialise and behaviour changes. BM and SM agreed on the key themes and sub-themes. Minority views were discussed and attempts were made to account for them in the analysis.

Results

This study identified attitudes of smokers and non-smokers and their changes over the time in respect of the introduction and establishment of the smoke-free workplace legislation.

Attitudes and opinions in relation to the ban

In retrospect, the smoke-free legislation in Ireland was slurred as being 'unworkable'. Many voiced concerns about policing, negative consequences such as pub closure, loss of employment and an end to the pub culture in Ireland [73, 216].

I think that in general initially the Irish probably thought, "Oh this is never going to work,"

Tom, male, ex-smoker, 34 years

Initially my reaction to it was positive. I said, "My God that's going to be great." But I didn't hold out much hope for it. I thought it was one of these things that wouldn't it be great but look sure it's Ireland. There's no way they're ever going to get this through.

Kate, female, ex-smoker, 35 years

Soon after implementation, some participants felt the law was unfair on smokers and some non-smokers felt sorry for smokers, particularly if the weather conditions were poor and smokers had to go outside to smoke. Of note was the perceived sense of injustice and pity towards older smokers.

I don't think it affected younger people as much as it did older people like.

Trish, Female, smoker, 26 years

Like the older people going into the bars, they wouldn't be going into them as much as they used to like, maybe. they're older and they have to get up and out the back to have a smoke and stuff.

Peter, male, smoker 25 years

Despite this injustice voiced after the legislation by smokers and sympathetic non-smokers, an overriding majority agreed that the ban was necessary to protect non-smokers. It was for the overall good and it had been a great success. Official statistics on enforcement and compliance from the Irish Office of Tobacco Control suggested that that smoking in pubs was a 'fragile prevailing norm'. Some studies identified that smokers had regret for starting to smoke [217] and many wish to quit (at some point in the future). It may be assumed that some were even glad of the incentive the law provided to cut down or quit smoking.

Stigmatisation of smokers and their smoking

Evidence of perceived stigma and the intensification of stigma specifically due to the introduction of the smoke-free legislation in this data were examined using the Link and Phelan components as a guide to analysis. The six components are outlined below and interpreted with reference to the smoke-free legislation in Irish pubs.

Separation

Separation emerged as the most important component of the Link & Phelan conceptualisation of stigma related to the smoke-free legislation. This component will be discussed in detail below mostly under the heading 'smoking areas'. We will also take a unique look at the consequences of this separation for both smokers and non-smokers.

Label

Here 'label' refers to individuals being categorised into groups; both smokers and non-smokers can be considered labelled groups. Non-smokers in the most part remained in the smoke-free area as smokers are obliged to re-locate to a designated smoking area to smoke which automatically labels anyone in these areas as smokers.

It will be evident later that this label is situational and may vary in intensity and also lead to mislabelling. As the now smoke-free area of the pub does not have the smell of cigarettes, the smell from smokers may be more intense. Many participants were labelled smokers based on their smell.

I hate the smell of cigarettes off someone when they come in (after cigarette).

Joan, Female, ex-social smoker, 35 years

Smell, or lack of, was one of the predominant favourable outcomes cited, reflecting the support for the smoke-free legislation among smokers and non-smokers; there was not any nasty smells, odour left on them (clothes, hair)(after attending the pub).

Joan, Female, ex-social smoker, 35 years

It's (the smoke-free legislation) kind of like separated people. And you're kind of labelled as well in a way like. You're the smoker or you're the non-smoker or you're all kind of...you didn't notice it as much. You didn't use those labels as much I think.

Mary, female, never smoker, approx 27 years

Stereotyping

Stereotyping refers to judgment made by others. Some smokers were 'stigma conscious', particularly due to the health and financial costs of smoking. Others referred to the 'stereotype threat' felt when meeting new people, disclosing their behaviour, and when socialising with prominently non-smokers.

I thinkthat ah smoking is being looked at as a little bit anti-social; certainly unhealthy and ah certainly economically very expensive.....at the end of the day it's a personal choice...

Tom, Male, ex- smoker, 34 years

(Meeting) boyfriend's parents and they asked, they found out that you smoke. You know I think it's kind of like, "Oh God she's a smoker." You know that would be a kind of awkward...I don't know if I really say awkward would be the word I'd use but kind of a sense of shame maybe as opposed to awkwardness.....I would never smoke out walking publically on my own somewhere.

Eithne, Female, occasional Smoker, 25 years

Being out on a social occasion with groups of people who don't smoke and then you are the person going outside the door for a cigarette. It's actually you know, I associate it with a sign of weakness

Eithne, Female, occasional Smoker, 25 years

Status loss

Here what is meant by status loss is a decrease in hierarchy status. Smokers seemed, in some instances, conscious of their 'deviant behaviour' and referred to what they saw as the social significance of their behaviour:

smoking is such a taboo thing

Trish, Female, smoker, 26 years

You know that I actually was doing such a low life thing, you know like smoking a cigarette like.

Joan, Female, ex-social smoker, 35 years

but it would never be publicly because I just think it looks horrible to see somebody (smoking), a girl, especially a girl, a man can tend to get away with it actually.

Eithne, Female, occasional Smoker, 25 years

I think it was completely normal, but I do think that it's become a real, you know...something you know for the vanquished people... it has become a poor kind of social choice

James, Male, smoker, 37 years

You know like smoking is a very selfish thing....I'm not ashamed about that I'm a smoker. I love them.you should have respect for other people again the hygiene and the smell and because you smoke you don't have to make everybody know it or smell it.

Aisleen, Female, smoker, 41 years

Discrimination

This theme includes rights of smokers and non-smokers, rejection of smokers by non-smokers and the movement of smokers to a smoking area creating one component of discrimination, 'structural discrimination', which will be discussed later under the theme of separation. From the data there was no evidence of obvious rejection of smokers by non-smokers.

Most participants acknowledged the rights of smokers to smoke and for non-smokers to have a smoke-free environment.

I think people are entitled to smoke....I think that they're (non-smokers) entitled to go in and sit in the pub without having to take in secondary smoke.

Mick, Male, non-smoker, 26 years

Most participants also felt that the rights of smokers were up-held with the provision of smoking areas. It was not the smoker who was discriminated against, but the second-hand smoke as a product of smoking.

it's not banning people from smoking, it's just where (they smoke)

Mick, Male, non-smoker, 26 years

(Smoke-free legislation/law is) not there to kind of stop you from smoking. I think they're just guidelines to say that passive smoking and things like that are detrimental to people within an area so you know, if you want to have a cigarette you know go outside.

Tom, Male, ex- smoker, 34 years

Power

The smoke-free legislation provided the potential for non-smokers (stigmatiser) to exercise power over smokers (stigmatised) in so far as it became illegal to be exposed to SHS in enclosed spaces including the pub. Non-smokers rights were firmly justified by the law.

smoking is a choice and no matter how much they complain about it (smoke-free legislation), it's just tough. I mean it's our health as well as theirs and if we don't want them to smoke around us then get out,

Anne, Female, non-smoker, 24 years

As we will discuss later some non-smokers went to the smoking areas with smokers. Again this is viewed, in most cases, as a *right* exercised by non-smokers and facilitated by the smoke-free law.

If I am near a smoker now it's my choice that I'm near a smoker rather than as I say, having the right to light up next to me and me not having any recourse to say, "Look, that's illegal or stop you're not allowed do it," you know.

Kate, female, ex- smoker, 35 years

The above quotation also illustrates the power this public health measure had on an individual's choice. On the one hand, smokers now had less choice in where they smoked (as opposed to being able to smoke in most pubs before) and the measure also provided choices for non-smokers if they wanted or did not want to be exposed to SHS exposure.

Impact of the geographical relocation of smokers to the smoking area on smokers' stigma

The consequences of the law for smokers and non-smokers were largely positive, most reflected on the lack of smell of SHS from hair and clothes, some smokers smoked less and most highlighted the benefits of 'good' smoking areas in terms of socialising and reduced noise. However, there were sustained negative aspects of the

ban over time for smokers, particularly in relation to poor smoking facilities, where visibility of the smoker intensified and poor weather conditions compounded negative feelings or stigma.

Smoking areas

Visibility

Soon after the enactment of the law, smokers felt more visible on the streets and outside pubs, non-smokers also noted this visibility.

I have to say because you've got passing traffic, you know and I think, "Oh my God! Someone see me at the door here," you know. So I prefer smoking rooms, like definitely.

Eithne, Female, occasional smoker, 25 years

The delay in providing facilities for smokers was most likely due to publicans concerns around the success of the legislation and if the need for smoking areas was to be realised. In order to attract new customers and to retain and satisfy existing customers, publicans who had space, constructed facilities for smoking. It will be discussed, how the publicans who constructed 'good' smoking facilities may have unintentionally undermined the potential impacts of the smoke-free legislation on smoking behaviour and stigmatisation.

When asked to reflect on visibility four years after the law, the situation seemed to change for most with the provision of good smoking facilities for patrons of pubs. However, it is not clear from these results if smokers just sought out favourable facilities and avoided pubs where they felt conscious of their visibility. In some instances the felt visibility of smoking faded for some as it became the norm to smoke on the street or as specific facilities were provided out of view.

I suppose that you just see the groups standing outside the doors of bars and restaurants and stuff like that, but I wouldn't pay that much attention because it's been a couple of years and you see it all the time now.

Frank, male, non-smoker, 33 years

The quality of these smoking facilities were essential in meeting the varying needs of smokers and non-smokers, in the understanding of the possible emergence of a new pub culture in Ireland and in the interpretation of the possible processes of stigmatisation in pubs.

Separation and ‘the putting out’ of smokers and their smoking

Linked with the above visibility was the physical separation or ‘division’ of smokers from non-smokers and the feeling of being ‘put out’.

ahh the people inside not smoking and the people outside smoking, so there’s a kind of a division now, you know.... you would yeah some pubs you would certainly feel like an outsider, yeah.

Eithne, Female, occasional Smoker, 25 years

Just because we were put out as smokers, it’s definitely for the overall good, you know. It’s a dirty, filthy habit you know at the end of the day, you know.

Noel, Male, smoker, 22 years

Smokers felt separated from the social group and their absence was visible or noted by others. The removal of smokers to a smoking room/area may have created stigmatised ‘smoking islands’. However, stigmatisation of smokers and the smoking areas may be situational, and dependant on the type and quality of the smoking area available.

Separation of smokers as dependent on the quality of the facilities

Standards or conditions of the smoking island (room/area) influenced the degree of stigmatisation of the island itself and that of its occupants.

It was evident from the interviews that there were huge variations in the standard of smoking areas made available in Republic of Ireland. Smoking areas will be broadly characterised in the following three ways. Firstly, as a designated largely enclosed space (e.g. roof, awing, walls, Perspex glass), with some or all of the following: heaters, seating, bar, music, permission to consume alcohol. Secondly, as an open space with some coverage from the weather, may have heaters, seating, bar, music, you may be allowed to consume alcohol. Finally, an area outside the pub (front or back door), with little or no facilities or protection from the weather. In most cases the designated smoking room/area was a newly constructed extension to the pub purpose built for smoking.

Many respondents referred to the smoking area as a new area or extension of the pub viewed in either a positive or negative way depending on the standard of the facilities available.

it’s comfy it’s like an extra room onto the pub.

Eithne, Female, occasional Smoker, 25 years

The smoking areas with high levels of SHS were labelled negatively by both smokers and non-smokers. Structural discrimination may apply here in smoking areas that are architecturally poor.

I saw one (smoking room) where it looked ridiculous. It was glass cage inside the bar. It was all, I mean you looked like you were at the zoo....it was actually very small and very poorly ventilated.

Liam, Male, smoker, 25 years

a Perspex house basically – a room and it was just clouds of smoke, you couldn't see anything..... Yeah it was sickening like..... It's an absolutely horrible thing. It's disgusting..... Because you can't even breathe. There's just I don't know you just what's the point in that like?

John, Male, occasional smoker, 31 years

the glasshouse thing is just a bit toxic. A chimney like, do you know what I mean? They have the one in the XX is ridiculous like. I mean you go in there like and it's like you are overcome within two seconds like.

Mick, Male, non-smoker, 26 years

really tiny smoking areas and it's just smelly and horrible so you don't really want to be out there for every long....just have air vents but it's just like being in a little cage and it's not very healthy or nice to do that.

Clare, Female, Smoker, 25 years

Most of these 'glasshouses' or 'cages' met the functional needs of smokers. Outside spaces with little or no protection from the weather (rain in particular) also provided a functional space. Again we saw evidence of structural discrimination in the poor facilities provided for smokers. These results suggest that poor facilities can be seen to intensify the formation of shamed smoking groups.

It's literally you go in to have your cigarette and to come back out

Trish, Female, smoker, 26 years

There are times when you stand outside the door and you are you..the vanquished, you know if the weather's not ah hospitable...., it can be tough....smoking outside.

James, Male, smoker, 37 years

You kind of felt sorry for the smokers during a winter's night that they'd be going out, you know. Yeah, that's about it really.

Kate, female, ex- smoker, 35 years

If however conditions in the smoking room were good or adequate the smoking room was viewed positively by smokers and non-smokers. If conditions on the island (room/area) were favourable, non-smokers often accompanied smokers in the smoking area.

Other (smoking areas) then are palatial, they're fabulous! They've got heaters and spot lights and candles and everything really... an ambiance that is more fun.

Kate, female, ex-smoker, 35 years

they have nice leather couches....a table, you can bring out your drinks and sit down and have a meal out there with your cigarette. They even provide games if you're bored and ahhh

Liam, Male, smoker, 25 years

the most gorgeous smoking area ever. It's a canopy outside and there's couches, cushions everywhere and plants – you really feel like you're in the jungle or something! And heat lamps and...it's really nice, a really good atmosphere, really well maintained.

Mary, female, never smoker, approx 27 years

(pub) is unbelievable... lovely out there. It's all leather seating and there's flat screens and there's a barand there's plants and everything and a big fire wall. It's lovely actually. It's nearly a quarter of the bar, of the whole place!

Peter, Male, Smoker, 25 years

So she'd (non-smoker friend) rather come in (smoking room) with us then to stand outside (pub).

Trish, Female, smoker, 26 years

Camaraderie among smokers and the opportunity for non-smokers to experience 'smirting'

The introduction of smoking areas and the need for smokers to leave the pub to smoke were predicted to result in a 'spoilt atmosphere' and a disruption to social interactions. As pointed out by some scholars, the findings of the present study suggest that as a consequence of the re-location of smoking to designated smoking areas, smokers joined together in solidarity as shamed groups and found solace in the introduction of 'smirting', smoking and flirting, into the Irish social scene [206, 218-219].

So you have like a comrade in them (other smokers), you know, so yeah.

Eithne, Female, occasional Smoker, 25 years

there's the general camaraderie coming into to it because no matter where you were, with whoever in a sense, you can always kind of go out and have a smoke and there's someone else out there having a smoke too who you can

ummm kind of talk to... you can relate to because you're smokingif anyone else comes out you are doing the same thing.

Noel, Male, smoker, 22 years

it's literally a locals bar and everybody knows each other in there, so if you're going out for a cigarette, there's a bunch of them that go out together.....(if the smokers went to a pub that was not their regular pub)...I think it would have an effect if they had to go out onto the street to smoke if there wasn't a smoking room or a beer garden or something like that. I think it would make them feel slightly more self conscious then.

Anne, Female, non-smoker, 24 years

In some instances non-smokers were happy to accompany smokers and benefited from their experience in the smoking room.

there's a whole big social side now around smoking outdoors. I mean I've got, some of my friends who don't smoke and they go out with me when I go out for a cigarette at the pub because they think it's the place you meet someone, you know, that you'll get chatting with somebody and there is.....seems to be a kind of, yeah well a kind of more interesting group of people outside smoking than there is inside and ahhh it's become a very social kind of thing again, going outside for a cigarette and chatting to people because you get chatting to all sorts of people when you're having a cigarette.

Eithne, Female, occasional Smoker, 25 years

To stand outside now it's as easy to talk to a stranger as it is to your friend, you know? And there is, there really is, definitely happens. That is definitely something that is completely to do with the Ban.

James, Male, smoker, 37 years

I think the atmosphere is slightly ahhh there's a slight release in the smoking area. And there genuinely seems to be more...lightness there.... I think it just gives people something to do you know. To just go from A to B and to step out into the night and in again,

James, Male, smoker, 37 years

Both smokers and non-smokers provided evidence of positive social interaction when spending time in a smoking area. The smoking area was seen as a place to meet other people, including strangers (smirking) and to have conversations (less noise). 'Smirking' is understood to mean smoking and flirting however evidence existed here of flirting among non-smokers who are in the smoking area for this reason, to flirt.

Potential for non-smokers to experience exclusion if they do not join smokers in the smoking area.

Non-smokers can be sympathetic (Goffman's 'the wise') of smokers' needs and have pity for them when they are 'put out' in bad weather to smoke. However, this

sympathy alone may not explain why non-smokers join smokers in the smoking areas. Perhaps non-smokers, in some instances, risk social exclusion if they do not go out to the smoking area with smokers. Our data suggest that some non-smokers felt obliged to join smoker friends in the smoking room or risk exclusion.

A new dating room, yeah *Joan, Female, ex-social smoker, 35 years*

she (non smoker) would be looking in at us, you know, that sort of a way. You're not going to sit there on the outside looking in at us all having a cigarette and a laugh and a joke, like.

Trish, Female, smoker, 26 years

There'd be groups of people outside and people would be saying it's a great way to meet people standing outside the door to have cigarette like but I'd say now it's just kind of the done thing..... they're talking to people that they wouldn't be talking to you know within the pub, so I think there actually is a kind of social thing there,

Frank, Male, Non-smoker, 25 years

but it really does separate groups though.... And I find being the non-smoker I end up sitting on my own and the whole thing has moved outside....so I go out (to smoking area)

Joanne, Female, non-smoker, 35 years

but the one thing that can be annoying sometimes is this you know. If you're with people and most of my friends would be smokers, they smoke and they go outside and I'm kind of sitting there with dust balls going round. Where's everyone gone? So sometimes I feel like I have to go out....just so I won't be sitting like an eejit on my own waiting for people to come back.

Mick, Male, non-smoker, 26 years

I thought it (smoke-free legislation) was great! I was so excited and by that I mean I am asthmatic and I have to take a few inhalers... But then I didn't realise at the time I would spend most my time in smoking area with friends...(at start of the smoke-free legislation while in university)

Mary, female, never smoker, approx 27 years

Smoke-free legislation and the interplay with smoking behaviour change

Our data suggest that uncomfortable smoking facilities and poor weather conditions intensify de-normalisation of smoking. In certain situations these poor conditions also intensify stigma in terms of separation, discrimination and underlines the power exerted on smokers by the new social norm (and law) to not smoke in certain places. The following analysis also provides evidence that these negative conditions impacted smoking patterns and specific adaptations of smokers and non-smokers to the law. Some smokers acknowledged the practice of chain smoking before the law was in place in pubs and alluded to the unconscious nature of their behaviour. Having to go out to smoke served as a motivational tool for some to reduce the

amount they smoke in this social settings. This reduced amount is most likely in-line with the smokers' routine daily consumption (when not at the pub). For some, the reduction in consumption was welcomed.

A silver lining- potential masking of stigma

Others reflected on their reduced consumption as a constructive result to a regrettable situation that 'discourages' smoking in an ever increasing number of places.

You, it's not as bad as when it came in at first because there's you know there's more facilities. I don't know if there should be more facilities or people would have given up if there weren't facilities made for it. I would have probably chain smoked (pre-ban). You know if you are sitting in the pub and you are with your friends and your cigarettes are next to you and you just keep smoking and you know you don't take any notice because you are drinking as well. So this, it is better that you have to have a think about when you want to go for a cigarette and if you can go and if you want to go. It is easier to forget about it and not smoke since the Smoking Ban, yeah.

Clare, female, smoker 25 years

Less, less because you just didn't want to get up and leave the group on your own, you know. You'd say, "Ere feck it. I'll stay in and not have..." Sure when you were able to smoke in the pub.... you'd be lighting one after the other after the other, you know? It was ridiculous actually yeah. Whereas now it's a case of you might light one every two or three hours or something or you know because you have to actually make a conscious effort to get up, go find the smoking area and go out and smoke now. So it's a little bit of hard work, you know.(Ban) has limited your choice (of where to smoke). You have to find a place to go to have a cigarette now and it's becoming more and more limited all the time, you know..... Anything that will help me, discourage me to smoke. I thought it was a great thing, yeah.

Eithne, Female, occasional Smoker, 25 years

The reduction in consumption was seen as positive in some respects but participants felt restricted and felt some form of injustice as they could not freely consume cigarettes in the comfort of the pub to their albeit 'ridiculous' pre-law rates.

Adaptations to the ban: Smoker acquired their nicotine level faster

Our data provides evidence of the impact of poor smoking facilities and poor weather in relation to smoking practices. Smokers' changed their smoking habits by rushing their cigarettes and smoke less (compared to pre-legislation levels).

Definitely you would smoke less if say like it is in Ireland a lot raining, you go outside and there's no smoking room or no canopy and you're standing outside the pub having a smoke and you don't want to be out there like because it's just you being put outside because you're smoking, you know what I mean? So it would kind of make you smoke the cigarette faster because you'd get soaked and you would smoke less because you don't want to go out and get soaked every time.

Noel, male, smoker, 22 years

You'd smoke less all right. Yeah oh without a doubt because like look at the weather outside, you're not going to stay outside for long are you? You'd smoke less or ummm

John, male,

smoker, 31 years

Adaptation to the ban: Smokers found comfort in the smoking area and smoked to pre-legislation rates

The impact of good facilities and/or good weather had on the social experience and the smoking consumption rates of smokers is significant. Where the facilities were considered favourable smokers would smoke to pre-law levels and the potential stigma in terms of discrimination was removed.

'You'll find a spot, you know if the weather is anyway good, you'll find a table and the group of you would sit around and stay outside for the night. So then again you're going to smoke as much as you would have done if the Ban wasn't even in.'

Eithne, female, occasional smoker, 25 years

'but then again they brought in the all these areas where you could smoke then though. So sometimes those are livelier than the pub itself so then you go out there and you'd find that you'd smoke more then again.

John, male, smoker, 31 years

Discussion

This research set out to investigate the specific consequences of the smoke-free legislation on stigmatisation of smokers and de-normalisation of smoking behaviour. It also explores the dynamic perspective on the processes of de-normalisation and stigmatisation as they may have changed over time. This work adds to a limited body of work on stigma generation via public policy. It attempts to address some issue raised by Chapman and Freeman [26] on the role of cultural change on de-normalisation of smoking. Firstly, I will discuss the potential interrelationship between de-normalisation and stigma with respect of the smoke-free legislation, and then I will discuss aspects of the specific results of this paper.

De-normalisation and stigmatisation are considered important strategies in tobacco control [26, 220]. Constructing behaviour in a more unacceptable way reduces its normality over time, and as the behaviour becomes more unacceptable the components of stigma (for example as identified by Link & Phelan) become more apparent and the behaviour may become more of a focus of stigmatisation. It has been argued that stigmatisation as a component of de-normalisation has, however, the potential to intensify existing social and health inequalities and may therefore be not a desirable strategy for public health interventions.

The interplay between de-normalisation and stigma can be understood to be evolving, dynamic with differences between the two concepts indistinct at times. Smoke-free legislation are considered de-normalising policies, some [26, 209, 214] identify the potential of such policies to have stigmatising effects on smokers. De-normalising policies can vary from tax increases to smoke-free environments. It is likely that as the target of the policy moves from a universal policy (applies to all smokers equally e.g. tax increase) to one which has more group differences (age, social class & gender e.g. smoke-free legislation) the potential for intensified stigma increases. It is also likely that in a country such as Ireland where there are historical and continual efforts to de-normalise smoking accessibility (price, age limit, point of sale advertising, marketing) and usability (smoke-free areas), there may also be an increase in sensitivity to stigmatisation of smokers and their smoking; as a sort of cumulative effect where any additional efforts can have a stigmatising effect.

The direction of the relationship could also be comprehended in reverse where stigma formation adds to overall de-normalisation efforts (potential to reduce initiation rates). The smoke-free workplace legislation, through the endorsement of inadequate facilities, presented the components of structural discrimination, labelling and separation of smokers. It also presented an opportunity for non-smokers to have power over smokers' in respect of their behaviour. The removal of smokers from the 'public realm' stigmatises smokers and their behaviour and also de-normalises smoking generally.

What is potentially of importance in respect to smoking from this paper, however, is that the intention and outcome of a de-normalising or stigmatising policy may not be inevitable or irreversible. De-normalisation and stigma associated with smoking

seems to have occurred over time and to varying degrees, depending on the circumstances. More and more places in Western society are becoming smoke-free zones and taxes and initiatives are put in place in an attempt to reduce initiation rates and increase cessation rates. There are more places where smoking is not considered normal or acceptable. However, this is not to say that stigma is always inevitable or irreversible. Without sustained efforts to reduce smoking prevalence and de-normalise smoking, smoking may become glamorised again and tobacco control efforts eroded. Smoking prevalence in Ireland dropped soon after the smoke-free legislation [221]. However, this decrease was not sustained over time. One explanation for this may be the provision of good smoking facilities in pubs which perhaps support glamorisation of the behaviour, may encourage non-smokers or ex-smokers to start smoking; and may be a disincentive to quitting.

Although the scars of stigma for smokers can remain, in theory, the effects may not be permanent. Ritchie *et al.*, [213] described how the separation (again seen as the main component of stigma) can be temporary where smokers can re-join non-smokers in the pub. Comfortable smoking facilities and having friends in that smoking area provide a circumstance where it is possible to have a behaviour that is less normal but in these optimum conditions does not always lead to stigmatisation of that behaviour. Therefore it is not always inevitable that stigma follows on from de-normalisation (or that the relationship follows in that direction).

Smoker stigma seems to be intensified in those with a certain profile including females [213] and older smokers. Smokers see that there is a life course in smoking, a time in their life for quitting, such as when they have children or when they get to a certain age. Perhaps stigma intensifies when you pass these so called milestones and do not quit.

Right the minute I, you know, if I have children or whatever that's when I am going to give up; that's when I am going to stop.....I think it's (quitting) to do with age (not the ban). You get older you just want to quit because it's fine like when you are 25, you know but it's a different story as you get on, you are thinking that it's just...you stop as you get older, you start getting more health conscious,

Eithne, female, occasional smoker, 25 years

The stigma associated with smoking in pubs is at present highly situational. In some circumstance (comfortable smoking facilities) de-normalisation can be seen or understood without stigmatisation (non-smokers are in smoking area too). Nonetheless caution in using this interpretation is warranted. The examples from this data may be isolated events, may be age related and may be an optimistic view of smoking portrayed by smokers to alleviate self shaming.

Stigmatisation related to the smoke-free workplace legislation appeared to be dependent on a number of levels. Firstly, smoking is considered a stigmatised behaviour, but its visibility can vary and can be controlled in the pub setting. The label of smoker can be based on self-reporting, but can also be given when someone is seen smoking a cigarette, when there is a smell of cigarettes and more questionably, when in a smoking area. Outside of satisfying nicotine cravings, the label is arguably transient (smokers can return to the smoke-free area) and the label is largely controllable in the pub setting. The smoker may choose to leave the 'structural discrimination' of the smoking area, not to be 'separated' from others in the pub and initiate the lifting of any 'status loss'. A stigma that is visible cannot be removed or altered or somehow impacts on others, is fated to be more intensive. Due to the removal of the risk to others (i.e. SHS in the pub) some stigma assigned to and felt by smokers may have actually lessened since the law, smokers are now 'considerate' by going to a smoking area and not exposing others to SHS, therefore any feelings of stigma associated with the SHS exposure lifted.

Secondly, the rights of smokers to continue smoking and the provision of good facilities (in some cases) facilitated the behaviour to be sustained and only the place to smoke changed following the introduction of the legislation. This change had an unexpected impact on non-smokers and not just to the labelled group as would be the intention of the de-normalisation process. One scenario might involve the 'separation' of the smoker from others leaving the non-smoker alone in the pub, or another scenario where there was no 'separation' of the 'them and us' at all when the non-smokers joined smokers in the smoking room. The latter scenario suggests the norm around smoking in pubs changed for both smokers and non-smokers thus not separating the 'stigmatiser' and a 'stigmatised'.

According to compliance rates from the Irish Office of Tobacco Control and the general success of the legislation, resistance to the law can be implied to have been low. Approval of smoking in the pub may have been a weak social norm, something both smokers and non-smokers were largely unhappy with and were therefore satisfied for the change to occur (therefore no power between ‘stigmatiser’ and ‘stigmatised’).

The restrictions on smoking in the pub cannot be generalised to other smoke-free settings and that the intensification of stigma for smokers is most likely more intense in other circumstances (poor smoking facilities), in other settings (workplace, home), for males and females and for different age groups.

While using the Link & Phelan [199] conceptualisation of stigma there was evidence that stigma exists towards smokers and their smoking. However, it was not clear if this stigma was directed solely at the smoker or was combined with their behaviour (because of SHS, smell, litter etc). Evidence to support claims that smoke-free legislation intensified this stigma in pubs was varied and depended on the quality of the smoking facilities. Evidence of stigma existed for all components of Link and Phelan’s [199] conceptualisation. However, the elements of labelling, stereotyping and discrimination appeared to be secondary to the element of separation which emerged as a theme of particular importance in the context of the smoke-free legislation. Findings in relation to the role of power and how non-smokers, as the potential ‘stigmatisers’, exert such power were varied. Non-smokers, in some instances, were empowered to say ‘get out’ if you want to smoke while others showed compassion to smokers and considered it a choice if they, as non-smokers, were exposed to SHS.

Relationship to other research

The smoke-free legislation was largely welcomed by smokers and non-smokers, which suggests a weak social norm around smoking, particularly in confined spaces with high levels of SHS such as those experienced before the smoke-free law in pubs. Our data suggest that separation as a component of stigma was mainly dependent on the smoking facilities. There were variations in the facilities available

to smokers in pubs and this variation resulted in differential consequences for both smokers and non-smokers.

Perceived increased visibility among smokers was an indication of intensified stigma and was related to the poor quality of smoking areas provided; these findings have been confirmed in Scotland [53, 204]. Hargreaves *et al.*, [204] describes how visibility decreased after the legislation in many public areas except for outside pubs. Our data suggests that the legislation initially resulted in a perception of increased visibility among smokers; this was sustained for some, particularly when in a pub with poor smoking facilities and when there were poor weather conditions outside. The issue of visibility may have diminished for some overtime because it became the norm to be seen outside smoking. For others the facilities improved in the pubs so they did not have to put themselves in sight of others or perhaps smokers sought out favourable smoking facilities in a different pub.

Where the facilities were poor, these spaces largely functioned as a place to smoke, where little extra time was spent, non-smokers usually didn't accompany the smokers and the most stigma was felt by smokers. Both Hargreaves [204] and Ritchie [53] noted provision of less suitable facilities for smokers in disadvantaged localities and emphasised the important role played by the quality of facilities in constraining smoking behaviour and intensifying stigma. Chapman & Freemans [26] suggested that smoke-free legislation contributed to de-normalisation of smoking where smokers' were "exiled" from others to designated areas and induced the identity of social "lepers"; or where there was compounding of existing stigma and resultant exiling of smokers to 'fenced off cages'. Nevertheless the present study showed that where the facilities were considered good or adequate by the non-smokers and smokers, this element of stigma associated with smoking was for the most part not intensified and the pub as a place to socialise did not change, the space to socialise just moved. This evidence was echoed in Hilton *et al.*, [206].

In some instances the facilities for smokers provided an extension to the pub; a place for smokers and non-smokers to co-exist and, as also noted elsewhere, [206] where social interactions such as 'smirting' were facilitated. A sense of camaraderie among smokers was also evident in this research and was noted elsewhere [206, 222]. In addition, our evidence suggested that some smokers did not feel stigma in all

circumstances. This is an interesting outcome that may be specific to the Irish pub culture that warrants further investigation in other countries. Hargreaves *et al.*, [204] work on the Scottish smoking ban spans over a year post-legislation and they mentioned the possible emergence of new comfortable smoking areas, particularly in more advantaged areas, towards the end of their data collection. These unforeseen and unexpected consequences of the smoke-free legislation may be counterproductive for tobacco control in terms of de-normalisation of smoking and increasing quit rates.

The consequences of the legislation were assumed to have been felt mostly by smokers. However, a major merit of this work was the inclusion of non-smokers in the sample. Within the selection of research which has emerged on changing social norms around smoking as a consequence of smoke-free legislation, particularly from Scotland [53, 61, 204, 212, 223], none completed analysis from the non-smokers perspective. The inclusion of non-smokers provided us with unexpected evidence of real consequences for non-smokers. Some non-smokers choose to be exposed to SHS in the smoking areas rather than risk isolation in the pub, while others choose to go to the smoking areas as the atmosphere and social interactions were better there than in the smoke-free environment (pub). Ritchie *et al.*, [53] suggested that smokers ‘rationalised the hassle of going out with stories of good social interactions’. Although this explanation could also be seen within our sample, the inclusion of the non-smoker provided unexpected experiences of non-smokers staying in the smoking areas with a smoker which suggests that perhaps some smoking areas do provide an opportunity for good social interactions. The inclusion of non-smokers also gave insight into the sympathy and understanding towards smokers, particularly when they had to smoke in poor weather conditions.

Alongside providing the potential positive outcomes of a ‘social lubricant’, the data here also presented feelings of guilt, shame and embarrassment among smokers because of their behaviour. The extent to which the smoke-free legislation has any effect in aggravating these feelings is unclear. It is plausible that the existence of tobacco control efforts, including health warnings pre- and post- the smoke-free legislation, contributed to intensification of the perceived stigma associated with smoking. It would also be reasonable to assume that smoking is most likely

considered more acceptable in the social settings of the pub and, therefore, it may be the last place to experience stigma.

The data from this study fit very well within the Link and Phelan theoretical framework. However, this work also highlighted the limitations of the framework as the sole basis for the analysis. Although useful to identify aspects of stigma, it was difficult to depict the dynamism of the smoke-free legislation when just using this somewhat restrictive framework. As discussed earlier, stigma evolves over time and is experienced differently in different situations.

Link & Phelan [199] described how ‘there are so many stigmatised circumstances and because stigmatising processes can affect multiple domains of people’s lives, stigmatisation probably has a dramatic bearing on the distribution of life chances in such areas as earnings, housing, criminal involvement, health, and life itself.’ In terms of smoking as a stigmatised behaviour, the life chances of smokers are largely unaffected. However, some evidence exists internationally of intensified stigmatisation of smokers e.g. the WHO no longer hire smokers and higher health insurance premiums for smokers in some countries.

Bayer & Stuber [220] described how ‘Policies and cultural standards that result in isolation and severe embarrassment are different from those that cause discomfort, acts that seek to limit the contexts in which smoking is permitted are different from those that restrict the right to work, to access health or life insurance, or to reside in communities of one’s choice’. As it stood in Ireland smokers were not discriminated against to the later extent. However, evidence does exist from this and similar research to suggest an intensification of the stigma felt by smokers since the implementation of smoke-free legislation. Some worrying evidence from this work points to a potential background shift which might glamorise smoking and facilitate smoking to become acceptable. In this regard, it is a fine balancing act as to what extent continued efforts are needed to reduce prevalence. From a public health perspective, stigmatisation of smokers can potentially reduce smokers’ likelihood of accessing healthcare. However, for Public Health to ignore the epidemic of smoking because of fears of stigmatisation of smokers would also be irresponsible. We need to be mindful of interaction between de-normalisation and stigma and constantly monitor for negative impacts of smoker stigma, learn from these and other examples

of how much is too much and if other routes are more effective as tools to reduce initiation and prevalence rates.

The questions remain unanswered as to whether Public Health should encourage the creation of stigma and can it be justified as a public health tactic in terms of reduced initiation and prevalence rates. Perhaps the potential burden of stigmatisation is justified by the ethical consideration of protecting the collective good.

Limitations

Some limitations need to be considered in this qualitative study. Given the existence of extensive tobacco control measures in Ireland preceding the smoke-free legislation it was not possible to differentiate between existing smoker stigma pre-smoke-free legislation and the contribution of the smoke-free legislation to this stigma. A longitudinal study design would have better assessed the exact consequences of the law on stigmatisation and would have provided a more accurate reflection of the dynamism of the law. Stigma is an evolving process and highly situational in the pub context and, as such, no direct claim can be attributed to the smoke-free legislation alone in terms of intensification of stigma among smokers.

Stigmatisation processes related to smoking most likely vary in different occupational settings, community setting [53] for different social classes, age groups and for males and females. This research restricted the age of participants and, therefore, the results cannot be generalised to other age groups. The participants were recruited in an urban area. Therefore, experiences within the rural setting were most likely not captured. Coupled with Hilton *et al.*, [206] identification of older men as a group with particular difficulties this is an area requiring further research, particularly among socially and economically marginalised communities among whom smoking prevalence is highest and pre-existing stigma is most likely to occur.

The focus of this research was to investigate experiences specifically related to the pub as a social setting where smoking was probably most accepted of any social setting. It is likely that the effects of the smoke-free legislation were felt more intensely in other settings including the home and in the workplace. The data relied on participant recall and perhaps smokers had adjusted to the new norms around

smoking and no longer recall their strong views around infringements on right and powerlessness which were evident in Ritchie *et al.*, [53].

Considering the age group of the participants it is likely that they go to ‘super pubs’ which might be more likely to have good smoking facilities designed to maximise customer numbers and length of stay in the pub. This then may have impacted on the ‘good social interaction’ felt and the co-existence of smokers and non-smokers in the smoking area. Due to the overall small sample size including only nine smokers (smokers were considered to have been most affected by the law) no real comparisons could be made in relation to age and education level achieved and responses to the law.

The researchers were non-smokers and thus did not belong to the stigmatised groups. Therefore, interpretations of the data were ‘from the vantage point of theories that are uninformed by the lived experience of the people they study’ [199]. However, since the researchers were within the same age group as the participants, have friends who smoke, go to pubs regularly and both have previously worked in pubs, it could be argued that they would have understanding towards smokers and non-smokers.

Interviews were undertaken in a smoke-free environment. Perhaps if the interviews had been conducted in a pub with a smoking area the participants may have responded differently.

Conclusions

Stigmatisation of smokers as a result of de-normalising policy may be unwelcome by some public health / health promotion practitioners but many tobacco control advocates would encourage stigmatisation. ‘There are people within the public health community who believe that they are stigmatising a behaviour and not smokers themselves’ [220]. Our research provides some evidence to support this belief. However, the results should be interpreted with caution.

Evidence for intensification of the de-normalisation of smoking solely owing to the Irish smoke-free legislation is inconclusive. Evidence existed for each element of the Link and Phelan conceptualisation of stigma with the component of separation, seen as a direct result of the smoke-free legislation, of most significance. However, the

degree of stigma felt by smokers when 'exiled' from public spaces, the evidence for the willingness of non-smokers to occupy these 'smoking islands' and the social interactions that resulted, although highly situational and dependent on the quality of the available facilities, may not be considered encouraging from a tobacco control perspective. The standard of smoking facilities seems critical in the understanding and interpreting how the smoke-free legislation has influenced smoker stigma. These facilities have the potential to impact on intensity of smoker stigma, smoking patterns and social glamorisation of smoking. More work is needed to investigate the differential impacts of these facilities on smoking and stigma. Perhaps future work should consider a different age group and ask questions which explore if the positive experiences of smoking in Irish pubs are sustained over time and if these experiences are portrayed by 'considerate' smokers as defence mechanism to alleviate self shaming.

Smoking facilities should be monitored to ensure compliance with the law (not more than 50% of the perimeter of smoking area is covered) so as to encourage efforts to de-normalise smoking as a behaviour and prevent glamorisation of smoking and smoking areas.

From a public health perspective the inconclusive evidence for increased stigma felt by smokers is positive. Perhaps de-normalisation of smoking intensified but perceived stigma felt by smokers did not.

Appendix: Overview of Link & Phelan's conceptualisation of stigma

In our conceptualization, stigma exists when the following interrelated components converge. In the first component, people distinguish and label human differences. In the second, dominant cultural beliefs link labelled persons to undesirable characteristics resulting in negative stereotypes. In the third, labelled persons are placed in distinct categories so as to accomplish some degree of separation of “us” from “them.” In the fourth, labelled persons experience status loss and discrimination that lead to unequal outcomes. Finally, stigmatisation is entirely contingent on access to social, economic, and political power that allows the identification of differentness, the construction of stereotypes, the separation of labelled persons into distinct categories, and the full execution of disapproval, rejection, exclusion, and discrimination. Thus, we apply the term stigma when elements of labelling, stereotyping, separation, status loss, and discrimination co-occur in a power situation that allows the components of stigma to unfold.

Because of the importance of power in stigmatisation, it is critical to ask the following set of questions:

- Do the people who might stigmatize have the power to ensure that the human difference they recognize and label is broadly identified in the culture?
- Do the people who might confer stigma have the power to ensure that the culture recognizes and deeply accepts the stereotypes they connect to the labelled differences?
- Do the people who might stigmatize have the power to separate “us” from “them” and to have the designation stick?
- And do those who might confer stigma control access to major life domains like educational institutions, jobs, housing, and health care in order to put really consequential teeth into the distinctions they draw?
- To the extent that we can answer yes to these questions, we can expect stigma to result.

To the extent that we answer no, some of the cognitive components of stigma might be in place, but what is generally meant by stigma would not exist. Stigma exists as a matter of degree.

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Chapter 6 Discussion, Conclusions and Recommendations

Context of this research

The Irish smoke-free legislation was framed as an occupational health intervention and considered the only viable measure to protect workers and patrons of bars, nightclubs and restaurants from the harmful effects of SHS exposure [21].

Research on the health and social impacts of smoking restriction and legislative smoke-free workplace legislation was sparse before the introduction of Ireland's legislative ban in 2004. When I started this PhD research work little systematic scientific evidence existed with respect to the health and social impacts of smoke-free legislation and most evidence was based on local, regional and workplace smoke-free policies. This changed dramatically over the past few years, during the preparation of this dissertation. Many countries have now joined Ireland in implementing smoke-free workplace legislation [28] and have contributed to the evidence base for the positive health, economic and social consequences of smoke-free legislation.

Many concerns arose before the enactment of the law in Ireland including loss in tourism, job losses and changes in pub culture. Concerns were not realised in relation to displacement of SHS from the pub to the car [60] or from the pub to the home, and in fact, there was an actual increase in the number of voluntary smoking restrictions in the home [60, 193-194] post legislation. However, there was some evidence that home bans were more common among the higher SES groups [127] and among younger groups [224]. Concerns for economic losses due to a ban were rubbished [225] as were concerns around job losses. There is now an abundance of evidence in support of a smoke-free environment among bar workers and the general population [226-229].

There is now convincing evidence on the positive health benefits from all smoke-free jurisdictions. The most unambiguous findings relate to reductions in SHS exposure [31-35] and improvements in respiratory health in specific work groups [36-39]. Consistent evidence now exists from Ireland [34-35, 39], Norway [32], Sweden [38] and New York [31] showing that where occupational exposure to SHS is reduced, respiratory symptoms improve among non-smokers after the implementation of smoke-free workplace legislation. Encouraging evidence from

California suggests that some of these reductions were sustained 10 years post-legislation and the prevalence decline had occurred across all demographic groups, and for both males and females [40].

Removal of SHS from the Irish workplace was the principal reasoning for the law. However, some additional consequences were also hypothesised including a reduction in initiation rates and increases in quit rates (reduced prevalence). Some evidence implies that legislation contributes to a reduction in prevalence of smoking and consumption among employees [1-3, 44].

This body of work can make a contribution to the evidence on smoke-free workplace legislation in terms of smoking prevalence and consumption, knowledge related to risk associated with SHS exposure and the social consequences of the law on smokers and non-smokers in the pub.

Outline of this chapter

The purpose of this chapter is to summarise and discuss the main results across the 4 thesis papers and to link the findings with recent international research results that had become available after publication or upon completion of the manuscripts. As newer Irish data on smoking prevalence has become available, the main findings of the 4 papers will be discussed in the light of national and international trends in smoking behaviour. Furthermore the findings will be discussed in relation to further developing a public health theoretical framework for the determinants of smoking. Finally, the results and the research process will be reflected upon considering the limitations of the study approach.

1. Has the Irish smoke-free workplace legislation resulted in reductions in smoking prevalence and consumption rates?

The bar worker study (papers 1 & 2) focused on smoking prevalence and consumption (individual lifestyle factor) among this specific occupational group. Paper 2 (chapter 3) investigated the impact of the smoke-free legislation on smoking behaviour among the representative follow-up sample of bar workers (impacts of smoke-free legislation on this individual lifestyle factor). This thesis also provided the first estimates of smoking prevalence and cigarettes consumption among bar

workers (chapter 2). Bar workers, as predicted, had an extremely high smoking prevalence (54%) compared to their general population counterparts (28%). However, cigarette consumption rates were comparable.

Allwright *et al.*, [39] concluded that bar workers were an occupational group exposed to high levels of SHS before the smoke-free legislation and, as outlined above, were a group with a high proportion of smokers, and they anticipated that they would change behaviour after the legislation [73]. The legislation was, therefore, expected to have a more profound impact on their smoking behaviour compared to others. Chapter 3 investigated the implications of the introduction of the smoke-free workplace legislation on changes in smoking behaviour among this 'at risk' occupational group and contrasted it with comparable groups in the general population. The prevalence of smoking dropped non-significantly among bar workers after the legislation and, contrary to expectations, the drop within the comparable general population sub-sample was larger (near significant). The changes in cigarette consumption was reversed with a significant drop seen among smoking bar workers; a drop of 4.2 cigarettes per day and a non-significant drop of 0.9 cigarettes per day within the comparable general population group. The legislation, therefore, did not seem to differentially impact on bar workers in the way hypothesised.

Since this paper was published a number of papers from other smoke-free jurisdictions have been published which also address the issue of changes to smoking prevalence and consumption. An overview of these publications is outlined within Table 1 in appendix 3.

A Scottish [50] study was very similar in design to the SmokfrI Study and both studies had similar smoking prevalence rates for bar workers pre-law (55%). Semple *et al.*, [50] found a reduction in smoking of 4% among their bar workers post legislation in addition to a significant reduction in consumption rates (drop of 2.5 cig/day). Data from the SmokfrI Study generated a drop in consumption twice of that seen in the Semple *et al.*, but found a non-significant decrease in prevalence. Evidence from Norway [3] and Spain [52], where bar workers were also the focus, found a prevalence drop of 3.6% [3], and both demonstrated a significant consumption drop of 1.6 cigarettes/day. Variation in results could be explained by

differences in culture, follow-up periods and the ways in which smoking behaviour was measured.

Smoking Behaviour Changes within the General Population

The bar worker study did not attempt to quantify changes in national smoking trends but used social class specific general population data for comparisons. Next I will look briefly at the national smoking prevalence rates in Ireland and in other smoke-free countries. This can provide a context for and an understanding of changes (or lack of) in bar workers' smoking behaviour and of how the smoke-free legislation may have impacted on smoking prevalence trends nationally.

Tracking data (12 month moving average) from Ireland was provided by the Office of Tobacco Control Ipsos MRBI Omnipoll [45]. According to this data the introduction of the smoke-free legislation in March 2004 was followed soon after by a decline in prevalence, especially among women. Internationally some evidence exists for reductions in smoking prevalence among the general population as a whole [49] and specifically among males [41] post legislation (table 1, appendix 3). Other research has supported this initial drop with increases in quit attempts seen just before [55-56] or just after implementation [55, 57]. Others have produced evidence of no change in prevalence [46] or quit attempts [56, 58] among the general population and some have shown a non-significant increase [47] after the implementation of the legislation. Additional research also provides support consistent with the previous evidence of smokers reducing their consumption or having an increased quit intention because of the legislation [49, 53, 56-57, 59-61, 204].

The initial outcome from Ireland of reduced prevalence and consumption rates relate to a number of aspects examined in my thesis. Within the qualitative paper we saw that smokers initially felt a heightened 'visibility' of their smoking when the law was enacted; this may have resulted in smokers re-considering their smoking behaviour. Smokers may have decided to quit smoking altogether or reduce consumption to avoid staying out in these 'visible' areas. Secondly, smoking facilities were reported to have been poor or there was a delay in establishing good facilities which may have resulted in smokers not wanting to go outside to smoke as

often or at all. Thirdly, some smokers had expected to use this opportunity to quit or cut down as demonstrated by evidence elsewhere [59, 73]. The gender difference in prevalence drop may also be seen reflected in the risk perception of SHS data where women's understanding of the risk posed by SHS exposure significantly increased overtime compared to men and perhaps contributed to a quit attempt or increase in contemplation of quitting. The noteworthy decline in prevalence among women also highlights the importance of considering gender issues in interpretation of the increased visibility and stigma associated with the law.

This initial drop in Irish smoking prevalence was not sustained for long after the introduction of the legislation, with prevalence reaching close to pre-law levels two years post-law (approx 26.5% back up to 28%). An additional observation by the Office of Tobacco Control (OTC) was that the proportion of occasional smokers had increased by almost 2% (18% - \approx 20%) since June 2008. A rationalisation for these results might be deciphered from the qualitative paper in chapter 5 where smokers may either have adjusted to the norm of smoking in the ever increasing 'visibility' of the smoking areas; the facilities for smokers in pubs may have improved; that smokers sought out pubs with good smoking facilities or through a mechanism of 'masking' the stigma smokers found consolation in the idea that they were not exposing non-smokers to SHS, and so felt justified in continuing their smoking behaviour. Other explanations might include the lack of appropriate resources and services to support smokers to quit as the law was accompanied largely by national level campaigns (quit-line) and not employing targeted socioeconomic and gender sensitive approaches. There was also reluctance from the government to increase tax on cigarettes; even though taxation is considered the most effective policy level intervention to reduce prevalence rates [230] and multi-level interventions are considered more effective in behaviour change than one-off interventions [62, 230].

Smoke-free legislation may have a delayed impact on the population smoking prevalence rates [63] and/or may contribute to a steady decline in prevalence overtime [48, 51, 64]. Supportive evidence for this can be seen in the more up-to-date tracking data from Ireland which indicates a steadier decline from 2008 (27.4%) to 2010 (23.6%) in prevalence for both males (25%) and females (22.2%) [45]. England has also seen a steady reduction in overall prevalence rates from 2003 to

2008 of 4% (from 25% to 21%) [48]. Other data also supports this where smokers contemplated quitting more [59-61] around the time of the introduction of the ban (table 1, appendix 3) and a slight decrease in the proportion of heavy smokers in Ireland (approx 8%- 6.5% [45], England [46] and Italy [41] which can all be considered to be an indication of intention to quit at sometime in the future.

2. Has the introduction of the smoke-free legislation increased risk knowledge related to second-hand smoke?

Study 2 involved two repeated cross sectional samples of Irish adults in 1999 and 2006 (telephone survey- commissioned research) and a representative sample of GPs (SmofrI Study) in 2006 who provided an ‘expert view’ of risk perception of SHS (chapter 4). Advances in health literacy related to SHS exposure were probable around the introduction of the smoke-free legislation. Improvements in health education were most likely obtained through mass media campaigns surrounding the introduction of the legislation and through social and community networks such as discussions with family, friends and work colleagues. Risk perception, as conceptualised in the Dahlgren-Whitehead model, was influenced by social norms around what is harmful and dangerous. Paper 3 (chapter 4) outlined the improvements in knowledge among the general population of health risks linked to SHS exposure. This enhanced knowledge may have ‘strengthened individuals’ and, may or may not, be expressed as reductions in prevalence and consumption rates among smokers. To what extent social norms influence risk perception is unclear using this questionnaire. The true extent of how the legislation impacted on the risk perception of SHS could not be ascertained through this paper (chapter 4) as paired analysis within the general population sample and a shorter pre-post evaluation would be needed. Although this paper cannot identify the changes specifically due to the law, it does provide insights into the trend overtime, and the improvements in knowledge that may add to an understanding as to the success and general endorsement of the legislation adding to the notion of smoking in public places being a ‘weak social norm’.

Chapter 4 does point to an alarming lack of appreciation among the general population of risk posed by SHS exposure to a vulnerable subset of our population: children. Of the GP sample 81.5% believed that SHS exposure increases a child’s

risk of ear infections compared to only 46% of the general population. Awareness of ear infections in children increased, but not significantly, with no change in disparity between smokers and non-smokers, from 1999 to 2006 (7%). However, the questions remains whether an improved knowledge of risk perception would translate into improved behaviour.

Smoking status, as expected, was consistently found to be the most important factor in the underestimation of risk, with smokers underestimating the risks posed by SHS exposure. Despite the encouraging evidence of the narrowing of this disparity in risk perception of SHS between smokers and non-smokers, the results point to an optimistic bias among smokers towards their behaviour [175, 231-232]. This optimism may be infringing upon Public Health and tobacco control advocates' attempts to reduce smoking prevalence and could be considered as an obstacle to behaviour change as well, as how it might interplay with gender, age and broad social class issues. This optimistic bias may also tie in with results from the qualitative work (chapter 5). In an attempt to justify and elevate feeling of stigma associated with their behaviour smokers may also take an optimistic view of how cigarette smoking will impact on their health and their social standing. This may be one small factor in a myriad of factors to explain smoking prevalence rates in any society and why, in this case, the drop in prevalence was not sustained; and the true impacts of cigarette smoking on health would need to be delivered in a new and innovative social specific way.

3. Are smoking areas providing smoking islands for the stigmatised smoker? Could the quality of smoking areas provided for smokers in Ireland act as a deterrent for smokers to quit?

Study 3 (chapter 5) comprised of eighteen qualitative semi-structured interviews exploring the social implications of the smoke-free legislation specifically on stigmatisation of smokers and their smoking behaviour (chapter 5). Leaders in tobacco control 'recommend that schemes rating the comprehensiveness of national tobacco control should be supplemented by documentation of markers of this de-normalisation' [26]. Stigmatisation of smoking, has been suggested as one of the mechanisms of de-normalisation [26], resulting in negative feelings and thoughts towards smokers and internalised feelings of guilt and shame among smokers [214].

Using the Link & Phelan [199] conceptualisation of stigma, this work identified markers of stigmatisation: labelling, stereotype, separation, status loss, discrimination, and power. These markers were used to interpret if the smoke-free legislation intensified stigma. Our paper (chapter 5) provided evidence of stigmatisation of smokers and of their smoking behaviour. However, evidence to support claims that smoke-free legislation intensified this stigma in pubs was varied and at times highly situational. The themes of separation and discrimination (structural) were of major significances in situations of increased stigma.

Perceived increased visibility among smokers on the ‘smoking island’ was an indication of intensified stigma and was related to the poor quality of smoking areas provided; these findings have been confirmed in Scotland [53, 204]. Hargreaves *et al.*, [204] describes how visibility of smoking decreased after the legislation in many public areas except for outside pubs and both Hargreaves *et al.*, [204] and Ritchie [53] describe how disadvantaged communities had generally poorer facilities for smokers and therefore the legislation intensified stigma particularly among this group. This is not to say that less visibility is translated into less stigma felt in other public areas, it is probably that the pub is an acceptable setting for smoking and smoking in other public places is becoming more and more de-normalised. Perhaps the pub is the final heaven for smokers not to feel the intensity of stigma that is felt in other public places?

The added value in this PhD doctoral work was the inclusion of non-smokers in the sample. Of the plethora of research which has emerged on changing social norms around smoking as a consequence of smoke-free legislation, particularly from Scotland [53, 61, 204, 212, 223], some included recent ex-smokers, but none completed analysis from the non-smokers perspective.

Chapter 5 outlines how many smokers maintained their pre-law consumption levels and also pointed to the surprising finding of the co-existence of non-smokers in the smoking area, both scenarios were associated with the provision of good quality smoking facilities. Non-smokers possess the potential ‘power’ to stigmatise but could also have the potential of reducing the de-normalising or stigmatising effects of the law. In scenarios where non-smokers co-exist in the smoking areas with

smokers, they remove the need for smokers to reduce their cigarette consumption; they also remove the separation aspect of socialising in pubs and cause confusion in the labelling of smokers. In some situations non-smokers enjoyed the experience and actively sought to go to the smoking areas, others felt a lack of choice as not joining the smokers resulted in their isolation in the smoke-free pub. As outlined above a number of aspects remain unclear. It is not clear from the results if smokers sought these good smoking areas out, if because the participants were young and part of a 'super-pub' culture they had more access to good smoking facilities, if the maintenance in consumption was part of a rebellious behaviour or if smokers justified their smoking because they were now 'considerate' (not exposing non-smokers to their SHS). A age differential in responses to the law is born out by Hargreaves *at al.*, [204] where smoking outside is suggested to be less of a problem for young smokers particularly in advantaged communities.

Nevertheless, this paper also summarises sustained negative aspects of the smoke-free legislation overtime, particularly in relation to poor smoking facilities. Smokers felt increased stigma because of the separation from others and discrimination (poor facilities), although it can be argued that it is temporary, in that smokers could return to the comfortable smoke-free area, it is, nonetheless, a stigmatising situation and an opportunity for power to be exerted by non-smokers 'to put out' smokers. The poor smoking facilities also resulted in some smokers smoking less after the smoke-free law and like Hargreaves [204] this occurred because of 'constraints imposed by the legislation' [204]. In Ireland, if the facilities were poor, if the weather was poor and/or a person was the only smoker in their social group, smokers spent less time outside smoking (and smoked less). Some of the data points to a continuation of daily smoking rates in these poor facilities and the reduction in consumption referred to was compared to pre-law 'chain smoking' in the pub.

Smoking is a social behaviour and evidence from this thesis suggests that the behaviour is more acceptable in the social setting of the pub. The enforcement of the smoke-free legislation was feared to have intensified stigma associated with smoking behaviour and of smokers and this research does provide some evidence for an intensification of stigma among smokers. This stigma might serve as a disincentive to smokers to access primary and secondary care services, remove a

coping mechanism as well as compounding stigma for already vulnerable sectors of society. Equally, however, there are results within this thesis and elsewhere [233] indicating that the pubs with good smoking facilities perhaps act to encourage and endorse smoking (although it could be argued that this is age related) which should be something of concern to tobacco control advocates. Tobacco control efforts should be very considerate of the interplay between de-normalisation and stigma formation, that the effects may not be permanent and may backfire. Caution is crucial in applying these methods for public health gains. If sustained efforts to reduce smoking initiation and reduce prevalence rates are not continued tobacco control efforts may be eroded due to increased glamorisation in certain public settings.

The smoke-free legislation can be considered to be a law exhibiting ‘universalism’ as the law applies to all in Irish society; with few exceptions, but has an ‘intensity that is proportionate to the level of disadvantage’ [234]. This has the potential of targeting those in the lower social groups encouraging quitting or cutting down. Those in lower social groups are targeted firstly because the legislation removes SHS from groups previously exposed to high levels as they are more likely to be employed in industries with high SHS levels. Secondly those in lower social groups are more likely to smoke thus the ban may have been an incentive to quit or opportunity to reduce consumption. This policy could have the potential of ‘levelling up’ health inequalities related to smoking.

4. Reflections on the theoretical underpinning of the research -

Determinants of health model & the smoke-free workplace legislation

This research was based on the social epidemiological determinants of health model and was informed by socio-ecological models. The determinants of health model may be considered simplistic in understanding a complex behaviour such as smoking and as such is useful to suggest the potential myriad of factors involved in any behaviour. For future analyses of public health policy I suggest that stigma be viewed across all layers of the Dahlgren's and Whitehead's conceptual framework. Inclusion of stigma as a factor at all levels of this DOH framework may contribute to stigma conscious public health interventions and evaluations in the future. This

may also help foresee possible negative impacts of policy among socially disadvantaged groups. The smoke-free legislation also presented a good example of the potential ripple effects of health policy on individual behaviour. Development of a specific model for smoking should advance perspectives and approaches to tobacco control internationally.

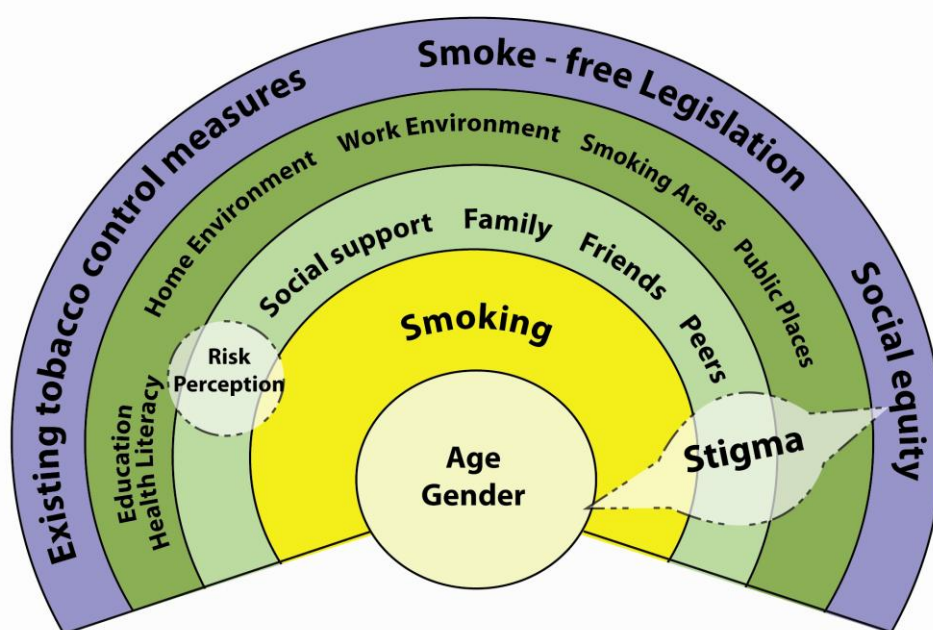
Addressing the social determinants of health ‘goes beyond the immediate causes of disease’ and places a stronger emphasis on upstream factors, or the fundamental ‘causes of causes’ (WHO CSDH, 2007). Upstream or distal determinants of health are considered ‘those that are distant either in time or place from any change in health status’ [235]. These interventions affect material factors and social structural conditions, such as equity, social gradients, social exclusion, discrimination and social environments [236]. Smoke-free workplace legislation is an upstream intervention, which can have the potential to change social determinants of health. Smoking is considered a ‘downstream’ factor which operates at an individual level and can be influenced by upstream factors.

Dahlgren's and Whitehead's conceptual framework is frequently cited to explain how health is shaped as a result of interactions between different levels of causal conditions, from the individual to communities to the level of national health policies. This thesis draws on the framework to guide the inquiry and interpretation of some of the impacts of the smoke-free workplace legislation and how the framework might be applied to smoking. As discussed earlier there are many determinants of smoking behaviour and it was unfortunate that it was not feasible within the SmofrI research project to investigate all of the determinants of health relevant to the smoke-free legislation.

With reference to the smoke-free workplace legislation, smoking is an individual behaviour but is influenced by a series of broader social, environmental and socioeconomic factors. Smoking can be influenced by social interactions and peer pressure at home, at work and in social situations (e.g. pubs and restaurants). All of these can shape smoking norms and, ultimately, individual smoking behaviour. A smoke-free work environment reduces opportunities to smoke as people have to go to designated areas to smoke and it has removed SHS as a potential prompt or reminder to smoke. The provision and standards of smoking areas also shape social norms around smoking and thus can influence smoking behaviour and interaction

between smokers and non-smokers. Figure 2 below is a graphical representation of the suggested conceptualisation of the determinants of smoking (with one of them being tobacco legislation) applied within the Dahlgren's and Whitehead's framework.

Figure 2: Smoke-free workplace legislation within the Dahlgren's and Whitehead's frame work



General socio-economic, cultural and environmental conditions

The smoke-free legislation is first located in the outer most layer (of figure 2) as a national policy; this intervention was accompanied by a host of historical tobacco control measures including smoke-free workplaces, taxation on cigarettes and a ban on advertising. Social equity is also an important determinant in terms of the legislation as it influences fair access to livelihood (employment), education, and resources at community level (e.g. smoking areas, health services); which filters

down to standards of smoking facilities for smokers, social norms and into likelihood of smoking.

Living and working conditions

Secondly, the smoke-free legislation is located within work environments (living and working conditions). The work sites of particular importance for the smoke-free legislation were bars and restaurants as these sites had no pre-existing policies like most other workplaces in Ireland. Other factors of particular relevance to this layer were other social and public spaces (including smoking areas, public parks, outdoor sporting venues and streets), private spaces (e.g. at home and in cars) and education (health literacy). The impact of the legislation on smoking in the private homes were addressed to some extent within the qualitative study (chapter 5) and issues related to healthcare services (including smoking cessation services, provision of nicotine replacement therapy, role of GP) were addressed within the GP survey but are not dealt with within this thesis.

Social and Community networks

Elements within this layer were foremost within the qualitative paper (chapter 5) on de-normalisation and stigmatisation of smoking and the risk perception of SHS exposure paper (chapter 4). The absolute contribution of each factor within this layer to smoking behaviour is unclear but it is apparent that social, family and peer pressures as well as social supports are important in determining and influencing social norms around smoking and knowledge related to smoking.

Stigma, as determined by social norms, may be conceptualised at the outer layer in terms of social equity and recent employment restrictions for smokers by the WHO. It is, however, apparent from our analysis of stigmatisation of smokers and of smoking behaviour that stigma is mostly operating at the living and working conditions level (at work, in pubs and restaurant, in other public spaces) and at the social and community networks level. Smoking behaviour is an individual behaviour and can itself be stigmatised. Age and gender are important factors to consider but I believe stigma in this instance was felt and interpreted mostly at the two aforementioned levels. In this examination of stigma, I suggest that stigma transcends one layer of the DOH framework and can be viewed as entrenched across three layers; namely the individual lifestyle factors, social and community networks,

and living and working conditions (Figure 2). I also suggest that this stigma was unidirectional; stigma imposed at a national level through policy, for example, filters through community norms and social networks and is experienced at the individual level. This individual stigma changes norms at the social and community level, impacts on living and working conditions and impacts on social equity (access to jobs and health services) at a national level. As outlined in chapter 5 stigma due to the smoke-free legislation is situational and dependent on a number of factors including the standards of the smoking areas and smoking status of friends.

Risk knowledge can be informed by education (health literacy) and information may penetrate through from family, social networks and peers. Risk perception of SHS is confounded by smoking status with smokers underestimating the risks associated with SHS exposure (chapter 4). In this examination of risk perception, I suggest that risk perception was directly influenced by education and smoking status but that most risk knowledge was influenced at the social and community networks layer (Figure 2). It was clear that the general public know the risk associated with active and SHS but were influenced in terms of behaviour by family, peers and social norms.

Individual lifestyle factors

Smoking behaviour as discussed earlier has many determinants. It is clear from this research that smoking behaviour (smoker and non-smoker) was influenced by each layer of the Dahlgren's and Whitehead's framework and that smoke-free legislation creates a ripple effect through the determinants to impact on these behaviours.

This thesis may contribute to the Dahlgren's and Whitehead's framework in two ways. Firstly, the smoke-free legislation can be considered a good example to demonstrate a ripple effect of an upstream intervention on downstream behaviours. Secondly, the examination of stigmatisation of smokers through this framework highlights the importance of 'stigma proofing' public health policies. Inclusion of stigma as a determinant at all levels of this DOH framework may contribute to stigma conscious public health interventions and evaluations in the future.

It is clear that the Dahlgren's and Whitehead's framework was, therefore, a comprehensive framework with which to investigate the impacts of the smoke-free legislation.

Determinants of health model & smoking behaviour - smoking prevalence, risk perception and stigmatisation

This thesis incorporated 3 separate research studies: the bar worker study on prevalence and cigarette consumption (chapters 2 & 3), general population and general practitioner data investigating risk perception of SHS exposure (chapter 4) and, finally, a qualitative study among a sample of the general population exploring stigmatisation of smokers and their smoking behaviour (chapter 5). Next, I will draw on the DOH framework to outline how the smoke-free legislation has impacted on smoking behaviour through prevalence and consumption changes, changes in risk perception of SHS exposure and stigmatisation of smoking behaviour.

5. Reflection on the overall research approach

This thesis presented the consequences of the smoke-free workplace legislation for both smokers and non-smokers. This research employed mixed methods (quantitative and qualitative) to provide a rounded evaluation; the qualitative study expanded upon and complemented our quantitative results and provided richness in detail to the overall research project.

Some of the limitations of the research would include small sample size within the bar workers study which may have restricted power in the estimation of prevalence and consumption changes. The thesis could have focused entirely on occupational specific effects among those within lower socio-economic groups but, instead, we developed a broad socio-ecological approach to the evaluation. Restricting the analysis to those from lower socioeconomic group would have been an option as the legislation was anticipated to impact on this group disproportionately because of their high smoking prevalence and fewer smoke-free restrictions before the legislation. However, to assess the overall impact on the legislation on society a holistic approach was utilised with the analysis considering smoking status, gender and social class where possible. The qualitative study aimed to assess the social implications of the smoke-free legislation for smokers and non-smokers, with a particular focus within the pub. Again here a larger sample size, especially among smokers, and a longitudinal perspective would have added greatly to the study findings. An interesting perspective on this work would be to consider gender and age related social consequences of the legislation.

6. Conclusions

The primary aim of the smoke-free legislation was to protect workers from SHS exposure, and it was hoped that it would have a knock-on effect among smokers by reducing prevalence and consumption. It was also envisaged that the legislation would increase the de-normalisation of smoking behaviour, thus further reducing prevalence and consumption. This work adds to an increasing body of research, examining changes in culture, specifically in pub culture and the consequences of de-normalisation of smoking on a social behaviour since the implementation of a smoke-free legislation.

This thesis provides evidence that Ireland's smoke-free legislation was associated with a drop in prevalence and cigarette consumption and points to added effects among 'at risk' occupational groups. The impacts of the legislation on smoking prevalence and consumption are likely to become clearer overtime. These effects will vary across all occupational groups and classes and future analysis would need to be mindful of class, gender and age differentials in responses to such measures. Preliminary findings from a longitudinal study on prevalence since SLAN 2007 show a reduction in Irish prevalence for most young adults, a reduction was seen among Social Class (SC) 3-4 and among women in SC 5-6 [237].

The smoke-free legislation, through a knowledge based mechanism, should have resulted in an increased understanding of the risks posed by SHS exposure. This thesis points to encouraging evidence of the narrowing disparity in knowledge between smokers and non-smokers of the risks SHS exposure poses. Noteworthy, is a lack of understanding among the general population of the risks posed by SHS exposure to the occurrence of ear infections in children. This knowledge deficit needs to be effectively disseminated as soon as possible.

Public health may utilise smoke-free legislation as a mechanism to increase the unacceptability and de-normalise smoking behaviour. The creation of smoking areas through the smoke-free workplace legislation provided an opportunity to intensify this de-normalisation. This thesis sought to identify stigma as a factor of de-normalisation and detect increases in stigma towards smokers and their behaviour as a results of the introduction of the smoke-free legislation. This work provides

evidence of stigma towards smokers and their behaviour and, in particular, outlines the situational nature of this stigma whereby ‘good’ and ‘bad’ smoking facilities had consequences for the level of stigma experienced.

In addition to the concerns raised related to increased stigmatisation of smokers and their behaviour, our findings also point to a possible encouragement and endorsement of smoking in pubs with good smoking facilities. Tobacco control efforts to reduce prevalence need to be mindful of potential obstacles to change among the Irish population and they need to continue and sustain tobacco control efforts in an innovative way.

7. Recommendations

Recommendations emanating from this thesis- Recommendations for research

Continued research on smoking areas

The standard of smoking facilities seems significant in the understanding and interpreting of how the legislation has influenced smoker stigma. These facilities have the potential to impact on intensity of smoker stigma, smoking patterns and social glamorisation of smoking. Follow-up qualitative work is warranted to investigate whether stigma is sustained or evolves overtime in the pub setting. A repeat of this work would also provide an opportunity to investigate variation in effects including if older adults and females respond differently to the de-normalisation and stigmatisation of smoking in pubs. A more in-depth analysis of the provision of ‘good’ smoking areas as an obstacle to smoking cessation could identify mediating factors for cessation and provide better evidence for smoking cessation approaches.

Behavioural responses to de-normalisation and stigma

The findings from the qualitative paper point to many other interesting research questions. Although the pub was the main setting focused upon by the smoke-free legislation other workplaces and social settings were impacted. It is likely that the experiences of stigma are more intense in other social and public settings such as work settings, private homes, outside public buildings and sporting venues.

Quantitative data could identify behavioural adjustments made by smokers in certain situations (e.g. while with non-smokers) and setting (work, at bus stop, home). This work may then inform some qualitative work around how de-normalisation/ stigma might interplay with smoking behaviour in these settings and if non-smokers have a role in stigma formation (or alleviation) in these other settings.

This PhD doctoral research and other works point to the importance of age, gender and socioeconomic class in smoking behaviour and responses to tobacco control measures such as the smoke-free legislation; these factors need to be included in all tobacco control research.

Long term impacts of the smoke-free legislation

This research highlighted the short and medium term impact on the legislation on smoking trends and provides significant insight into effectiveness of such policies on behaviour. Cotinine measures and respiratory health questionnaires were used to detect changes in SHS exposure in the very short term while national smoking trends suggest some medium term impacts. The consequences of reduced SHS exposure are, in some instances, more appropriately measured in the longer term. Hahn [63] suggests that the impacts of smoke-free legislation on smoking behaviour are more likely seen in the long term. A repeated cross sectional quantitative study among bar workers would be interesting to investigate long term impacts of the law on smoking behaviour. Other long term impacts include examination of changes in hospital admissions among adults (heart attacks, respiratory conditions cardiovascular conditions [238]) and children (asthma [239]). To date little has been done in Ireland to assess the longer term impacts of the legislation.

Qualitative research, collected retrospectively, among those who quit smoking due to the law, but began smoking again, may identify factors associated with a quit attempt and may shed more light on why national prevalence dropped and increased again 2 years post legislation. This could then be followed by quantitative work to identify key triggers, mediating factors or components of the law and other tobacco control measures (as it would be difficult to isolate impact of just the law) that encourage a quit attempt and subsequently led to a relapse in smoking. Perhaps

some of these factors can then be incorporated into smoking cessation programs and policies.

Recommendations emanating from this thesis - Recommendations for practice and policy

Continued surveillance and improvements to tracking data

The Office of Tobacco Control (OTC) in Ireland was responsible for commissioning tracking data on smoking behaviour in Ireland. There is a need for continued surveillance and research of prevalence trends in Ireland. Smoking prevalence and consumption rates are decreasing in Ireland, the long-term impacts of the smoke-free legislation on smoking behaviour in conjunction with gender, age and socioeconomic class differences in responses to this and other national policy should be investigated. Continued surveillance are vital for monitoring the impact of smoke-free legislation in the long term and for monitoring other tobacco control policies into the future, identifying cross-country differences, understanding some of the reasons for policy successes and failures, and disseminating evidence-based guidance on how to implement strong policies. Surveillance and opinion polling are needed to advance thinking and approaches to further reduce population exposure to SHS. Smoke-free cars and other outdoor policies (hospitals, colleges) are underway in Ireland and elsewhere. Statistics are needed to support these advances and demonstrate effectiveness.

This OTC tracking surveillance had taken into consideration the extensive use of mobile phones among the Irish population. Other improvements in this data collection may include use of a standardised measure for socioeconomic class or obtain data on occupational group, obtaining age as a continuous variable, obtain data on quitting behaviour and the adaptation of the questionnaire for younger participants. Research on determinants of initiation among teenagers and factors influencing sustained behaviour is important to inform development of new evidence based approaches to cessation and prevention of initiation (including education programs targeted to teens).

Occupational specific approaches to smoking cessation

The high smoking prevalence reported within this thesis among bar workers underscores the critical importance of working with this population (and similar

occupational groups; construction workers, mining, soldiers, catering staff) as an audience for tobacco control efforts. Research like this also demonstrates the importance in ensuring we concentrate efforts on helping the more disadvantaged groups in society to quit. And also further emphasises the potential use of adapting national surveillance to include data on occupational groups.

Effective dissemination of risks of SHS exposure

From the risk perception paper it is clear that the misconceptions among smokers of harmful effect of passive smoke need to be dealt with, particularly in relation to the risks posed by young children exposed to SHS in the home.

Recommendations for tobacco control generally

Tobacco control efforts

There is a need for sustained efforts to reduce prevalence and consumption; tobacco control cannot stand still in Ireland. Tax increases on cigarettes are seen as one of the most effective measures to reduce national prevalence rates [230] but we have witnessed only limited increases on tax on cigarettes in recent years in Ireland. Comprehensive and integrated tobacco control strategies are needed. A combination of measures such as tax increases, education and training programmes for undergraduate healthcare professionals; occupational, gender and age specific approaches to smoking cessation could be used in Ireland to tackle the tobacco epidemic more aggressively. Multi-faceted approaches are consistently proven to be more effective than solitary interventions [230].

Ireland has a long history of tobacco control but perhaps there has been an over emphasis on policy and legislative measure to tackle the issue, this needs to be redressed. Community interventions are important to supplement the macro impacts of legislation. Interventions based in Irish schools and workplaces are usually *ad hoc* and limited to a few organisations without an overall strategy and are under evaluated.

Smoking cessation services & training

Smoking cessation services need to be further developed in Ireland in terms of access, success and effectiveness. Health professionals including GPs provide an

essential service to the population and their community service present valuable opportunities for exchange of brief interventions advice and knowledge for clients. Training of GP practice nurses for brief interventions and the formation of clinics for smoking cessation should be considered. Development of training for smoking cessation should be continued by the HSE. Incentives could be put in place to accredit GP practices for undertaking specific training and delivering a systematic approach to smoking cessation.

Tightening of smoke-free legislation

Sustained monitoring of the smoke-free legislation and the continued development of tobacco control measures in Ireland are needed. The Irish government could ensure all smoking facilities meet regulatory requirements and that future tobacco control measures consider the potential of increased glamorisation of smoking in certain setting for certain age groups and the potential targeting of non-smokers as facilitators of the de-glamorisation of smoking should be considered.

Chapter 7 References

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Appendix

Appendix 1

Context of research

The data generated for these PhD papers originate from several study populations and datasets. Only a proportion of the data generated is presented within this PhD. Data generated through this large body of research also formed substantial parts of additional publications namely Allwright *et al.* (2005), and Pursell *et al.* (2007). Additional publications are planned to maximise the available data.

Work originally commenced on the All Ireland Bar Workers Study (AIBS) before the smoke-free workplace legislation. This was a quasi-experimental follow-up study among bar workers. The research was compiled in collaboration with colleagues in 3 other study centres Dublin (Prof Shane Allwright (PI) & Ms Gillian Paul), Galway (Ms Lisa Pursell & Mr Diarmuid O'Donovan) and Northern Ireland (Mr Eamon O'Kane).

Data were gathered before and 1 year after the ban across all centres and included:

- Respiratory symptoms
- Cotinine measures
- Occupational SHS exposure
- Attitudes
- Smoking behaviour
- Alcohol consumption
- Respiratory health measures –PEF and FEV1

Additional laboratory based respiratory data was collected in the Dublin centre under the supervision of Prof Luke Clancy.

Smoke Free Ireland Study (SmofrI) –Cork

Dr. Birgit Greiner, Ms Bernie Lonergan (Mullally), Ms Sarah Meaney & others

Study 1: Follow-up of random sample of bar workers (3 phases). This was the only random sample of the 4 centres. Data were generated as outlined above with an additional data phase two years post-ban.

General population data were kindly made available to the SmofrI study by the Office of Tobacco Control. This facilitated occupational class analysis of trends in national smoking behaviour during the same time periods.

Study 2: Smoking risk perception among general population (repeated cross-sectional) and General Practitioners (General Practitioners; follow-up & representative samples)

- Risk perception of SHS exposure
- Risk perception of active smoking
- Cumulative risk and optimistic bias
- Smoking behaviour

General Population data were collected by TNSmrbi (telephone marketing company) on behalf of the SmofrI project.

Data were available for the general population and GPs in 1999 on most of the above measures. This GP sample was followed-up in conjunction with an additional sample of newly qualified GP for representativity.

Study 3: Qualitative investigation of social and behavioural consequences of smoke-free workplace legislation on Irish culture- specifically within the Irish Pub

This study included the following broad areas:

- Stigmatisation of smokers since the introduction of the ban
- Impact of ban on smoking behaviour generally and specifically within the social setting of the pub
- Smoking behaviour life course
- Risk perception of active and SHS

The conceptualisation work for this study is included as appendix 4. Substantial data were generated from this aspect of the SmofrI study and is envisaged to be published at a later stage by colleagues.

Appendix 2

Conference Presentations

Society for Research on Nicotine and Tobacco, Dublin (April 2009)

Effect of the Irish smoke-free workplace legislation on smoking behaviour among bar workers.

Sociology Association of Ireland, Waterford (May 2009)

Consequences of the ban on workplace smoking in Ireland – The stigmatisation and “exiling” of smoking –a qualitative study.

European Tobacco or Health Conference, Basel (Sep 2007)

Is exposure to second-hand smoke dangerous? Risk perception before and after the smoking ban.

Joint Conference of the Society for Social Medicine and the International Epidemiological Association, Cork (Sep 2007)

Risk perception of smoking in the general population: Changes from 1999 to 2006.

13th World Conference on Tobacco or Health, Washington DC USA (July 2006)

The impact of the smoke-free workplace law on smoking and smoking rates among bar workers in the republic of Ireland - All Ireland Bar Study.

Lets Talk Health Research Seminar @ Health Research Board (Dec 2006)

Changes in smoking prevalence and consumption rates in the Republic of Ireland compared with Cork bar workers before and after the legislative ban on workplace smoking.

Society for Social Medicine Glasgow UK. (Sep 2005)

The smoking ban and prevalence of smoking in Cork bar workers.

Office of Tobacco Control. (March 2005)

Prevalence of smoking and smoking consumption among bar workers in Cork City. Smoke-Free Workplaces in Ireland; A *One-Year Review seminar @*

And co-authored others; conference posters not included here

Appendix 3

Update on evidence for smoke-free workplace legislation and active smoking since 2004

Several publications on the impact of smoke-free policies have been published since the publication of my second paper, thus, were not included in the background section of this publication. This review provides an update of published research on the impact of smoke-free legislation on smoking prevalence and consumption which were not included in paper 2 (chapter 3) ‘The effects of the Irish smoke-free workplace legislation on smoking among bar workers’ and refers to research published since 2004. Also refer to the accompanying Table 1 below.

Search Strategy:

Combinations of the following search terms were used in the search: smoking behaviour, smoking prevalence, smoking rates, smoking consumption, smoke free/smokefree/smoke-free workplace/ legislation; smoking ban; workplace legislation.

Databases searched included: PubMed; Google Scholar; BMJ journals; Cochrane Collaboration; Oxford Journals; Wiley InterScience

Inclusion/exclusion criteria: Included here are both quantitative and qualitative research finding. Since there are some countries with partial smoke-free policies and others with regional legislation I decided to only include studies from countries with comprehensive national smoke-free legislation.

Table 1: Update of evidence of impacts of national smoke-free workplace legislation on active smoking since 2004

	Smoking legislation	Reported Effect(s)	Study design and period	Reference
England	Complete ban July 2007	No change in prevalence. Sign. ↓ in number of smokers smoking > 20 cig/day 2.9% more smokers made a quit attempt. post-ban 19% of smokers making a quit attempt did so in response to the legislation.	Postal survey before & ban National survey, Pre-post ban	Elton & Campbell 2008[46] Hackshaw <i>et al.</i> , 2010 [57]
Scotland	Complete ban march 2006	Contemplation of quitting ↑ pre-ban. Attempts & contemplation to quit ↓ post ban. Reports of cutting down post ban ↓ cigarettes smoked. Smokers in disadvantaged communities more likely to report ↓ and successful quitting than smokers in affluent areas No significant post-ban difference between Scotland (ban in place) and rest of UK (no ban) in quit attempt or cessation . 2.2 fold ↑ in smokers quitting smoking pre-ban compared to the same time period one year previous. Quit rates for 2006 & 2007 were consistent with gradual increase in quit rates prior to ban. Supported for ban associated with a higher quit intention pre-ban. Perceptions of unacceptability of smoking ↑ more in Scotland post-ban compared to rest of UK. 4% drop in smoking rate among bar workers (pre-ban to 1 year post-ban). Drop in consumption of 2.5 cig/day (significant)	Pre-post qualitative study (bar workers) Longitudinal qualitative study Quasi-experimental telephone survey Cohort (50-75 yrs old) pre- & post-ban Longitudinal survey (gen pop ≥18 yrs); Scotland (at time of ban & post ban) V's U.K (no ban) Cohort (bar workers); pre- & post-ban	Eadiea <i>et al.</i> , 2010[59] Ritchie <i>et al.</i> , 2010[53] Hyland <i>et al.</i> , 2009[58] Fowkes <i>et al.</i> , 2008[56] Brown <i>et al.</i> , 2009[61] Semple <i>et al.</i> , 2007[50]
New Zealand	Complete ban Dec 2004	Quitline had ↑ in calls, ↑ dispensing of nicotine replacement therapy vouchers, during the month of, and month after, the smoke-free law compared to the same two months the year before	Time series analysis on Quitline 2 yrs pre- & 1 yr post ban	Wilson <i>et al.</i> , 2007[55]

		The % smokers who reported that they smoked "more than normal" when at public social venues halved between 2004 & 2005 (57.8% to 28.6%).	National surveys Pre- Post ban	Thomson & Wilson 2006[227]
Spain	January 1 st 2006 Bars restaurants o ≤ 100 m ² can be smoke-free o ≥ 100 m ² must be smoke-free, ventilated smoking room allowed	Sign. ↓ in consumption (1.6 cigarettes/day p<0.01) from pre to post ban. Strongest effect seen in hospitality workers working in completely smoke-free environments Non-significant ↑ in % of smokers from 31.7% pre to 32.7% post-ban (p=0.55)	Prospective cohort study; pre- post-ban Cross-sectional surveys ; national survey >18 yrs pre-post-ban	Martinez-Sanchez <i>et al.</i> , 2009[52] Galán <i>et al.</i> , 2007[47]
Ireland	Complete ban March 2004	46% of smokers said law made them more likely to quit smoking. Of those who had quit, 80% reported that the law helped them quit and 88% to stay quit.	quasi-experimental national cohort study pre- & post-ban	Fong 2005[60]
Italy	January 2005 Ban in all public indoor spaces, smoking rooms allowed.	↓ prevalence of 3.6% from 2005 to 2008 (25.6% to 22%) ~30% of ex-smokers reported influenced ~83% of smokers said no effect, 12% reported ↓ consumption Prevalence men ↓ from 34.9% pre- (2000) to 30.5% post-ban (2005); drop in moderate (<20cig/day) smokers from 29.8% -26.2% and heavy (≥ 20 cig/day) smokers from 5.1% - 4.3%. Prevalence among women was unchanged (20.6% 20.4%) as was the amount smoked.	4 national surveys from 2005, 2006, 2007 & 2008 6 national surveys between 2000-2005	Tramacere <i>et al.</i> , 2009[49] Cesaroni <i>et al.</i> , 2008[41]

Appendix 4

Contextualisation for SmokfrI Qualitative study & Topic guides

Note:

This document provided additional information used in the conceptual framework for the qualitative work on smoking behaviour within the SmokfrI study. Some of the information generated through this process has now moved to the introduction or discussion chapters of the thesis. I have also included the two topic guides for the qualitative interviews.

This document is not of publication standard, key publications which were considered relevant to this qualitative piece are referenced.

Introduction

The legislative ban

Evidence has accumulated on the health risks associated with second-hand smoke (SHS) exposure. A report by Allwright [22] and Surgeon General in US [2] concluded that smoke-free workplaces were the ‘only viable measure to protect workers’ from the harmful effects of SHS.

In Europe the first legislative ban on workplace smoking was introduced in the Republic of Ireland in March 2004.

The ban was framed as an occupational health and safety measure with a primary focus on the protection of workers’ health [23] including those employed in the hospitality industry. Additional effects have been attributed to the introduction of the legislative ban including reductions in smoking prevalence and consumption drop [4-11] and changing norms around the social acceptability of smoking (de-normalisation).

Smoking, Segregation and Stigma

Research from New Zealand [12] and Australia [13] emphasise the importance of examining the possible harmful consequences of multiple tobacco control measures which through processes of altering the social meaning of smoking, de-normalising

it and eroding its social acceptability they say are leading to ‘compound layers’ of stigmatisation of smoking and smokers.

Thompson attempts to theorise the way in which people make sense of continued smoking in the face of ‘stigmatisation of the substance and the space’. Thompson [12] draws on Tuathail’s idea of geo-power describing the stigmatisation of smoking by separation, categorization, definition or confinement (‘you’re a smoker, you’ve got to get outside’ to ‘smoking islands’) and describes how this power then leads to more pronounced bio-power. Gastaldo [14] describes bio-power as the mechanism employed to manage the population and discipline individuals to produce or protect a healthy and productive citizenry. The ‘hierarchical observation’ that people can be controlled merely by self-regulation (self-surveillance, Foucault). Regulation of smoke-free social spaces such as pubs (bars) could be controlled by the mere possibility of being observed or visibly deviant (Foucault; Panopticism) or the threat of being judged ‘abnormal’ or given a sense of ‘disapproval’ [15] which Foucault says constrains us from misbehaving. Others discuss how public health and health promotion encourages individuals to be ‘health conscious’ ‘self regulated’ [16] (pg131) and ‘good citizens’ [17] by taking personal responsibility to protecting ourselves (Abel 1982 from [23]), and the entire population from SHS.

Thompson refers to ‘smoking islands’ as fixed geographical locations with mostly fixed residents, who are consistently exposed to stigmatisation. We could argue that Thompson’s [12] idea of ‘smoking islands’ are only applicable to pubs seen as ‘regulars’ by their clients and that are considered local or ‘third places’. The new superpub or a pub which may not provide a ‘third place’ may or may not give that same sense of everyone on the islands knows each other and are stigmatised together.

As smoking islands vary across pubs with different codes of behaviour and norms around smoking it is possible that the level and extent of bio-power and stigmatisation may also vary. Can these differing levels of stigmatisation determine where smokers choose to go to smoke in comfort or has this variety any ‘compounding’ impact on stigma among smokers?

Chapman and Freeman [13] identify what they posit as markers (evident in the Australian context) of how smokers' identities have been "spoiled". In relation to smoke-free environments public settings and the home are identified as settings where smoking restrictions are imposed. The authors argue that in public settings smokers are "exiled" from others to designated areas or obliged to smoke in sometimes unpleasant surroundings such as parking lots, alleyways sometimes in poor weather within view of passers by. Dedicated spaces for smokers, such as smoking rooms in airports, they argue contribute to feelings of "otherness" amongst smokers and induce the identity of social "lepers". Not only have the public spaces undergone 'purification', smokers are now also 'exiled' from their private homes. They also describe how, due to constraints on their smoking, smokers do not enjoy their social time as they are busy thinking of how they can next accommodate their addiction. Poland [23] describes how smokers continually monitor which spaces are permissible to smoking in anticipation of needing to smoke.

Smoking Identities

Smokers and their smoking, at an individual level, can play a role in social identity (glamour/attraction/rebellious) [18] and as providing pleasure or relief from stress. A smoker could also be perceived as having no personal regard for health, addicted and weak (Brandt 1998 cited in [12]) backward, uncivilised and unclean [22] (Poland 1998 cited in [12]) druggie, tough and tarty among youth [18]. These identities may change as smokers move through the life course and with increased de-normalisation of smoking.

Smoking was largely considered as an individual practice with direct consequence to the individual; since research has confirmed the health consequences of smoking are beyond the individual that smokers are now responsible for 'contaminating' [23] others including most notable the innocent and vulnerable such as young children and babies with SHS (Farrimond & Joffe [21-22]. Farrimond & Joffe [23] went on to say that those from lower SES, in accepting the dangers associated with smoking and SHS, may indicate an internalisation of the 'spoiled' smoking identity. Farrimond & Joffe conclude that lower SES groups, as opposed to all smokers (as outlined by Chapman [13]), tend to internalise stigmatisation rather than

challenge it or change their behaviour to avoid it. Thompson challenges this and distinguishes between smoking consequences to self and on health of others through SHS by arguing that smokers can 'claim responsible identities' if they adapt their behaviour to protect others from SHS. Therefore instead of 'dual stigmatisation' [12] smokers feel they are 'good citizens' by not exposing others to SHS. So perhaps instead of smokers being deviant and resisting the measure they are alleviated from some of their stigma through smoking in these spaces and continue smoking?

Regular pub

The new smoke-free workplace legislation's uniqueness was its focus on the social setting of the pub and restaurant. These behavioural settings could be understood as the most difficult settings to enforce the law and the most controversial in relation to personal choice to smoke. For this reason and because pubs present us with a diverse social setting our research will focus on the experience of the ban in relation to the pub.

Social acceptability of smoking is highly situational ([23] pg188) and having and referring to a regular pub in relation to smoking may influence the level of stigmatisation expressed by smokers. It is possible that a smoker in his/her regular pub may feel comfortable smoking alone and not feel stigmatised or 'exiled'. Similarly non-smokers in a regular pub may feel comfortable alone within the pub while smokers leave.

Pubs will vary in the provision of spaces available for smoking and as such could present differing levels of comfort and acceptability of smoking. It could also be argued that within each different pub type (small Vs large, modern Vs old fashioned) exists a different code of behaviours around smoke-free environments and where smokers can smoke. This can be influenced by how comfortable the designated area is, if non-smoker routinely stays in these areas too and if alcohol can be consumed while smoking.

Taking account of the participants' experiences within the pub they visit regularly is important in understanding what is most commonly experienced since the ban.

'Think of the pub that you regularly go to; what kind of a pub is it?'

'How often do you go?'

'Are some smoking areas better than other? Why?'

'Which in your opinion are the best types of smoking areas?'

If facilities are poor not only could the amount smoked be less but the smoker could also feel more conscious of their smoking feel that their smoking is deviant. Another consequence of smokers going to the smoking space is that their absence and length of absence can be visible to companions and have consequences for involvement in conversation and possible judgements on their 'deviant' behaviour.

Alcohol & Smoking culture

As mentioned above there have been significant changes in both the extent and style of alcohol consumption and the nature of the pub since the early 1990s. From an Irish context the shift in drinking culture was evident where socialising and specifically drinking at home became more frequent [24-25]. This new culture is noted to have developed due to a number of reasons including new drink driving laws and increased cost of alcohol in pubs. With the emergence of this new drinking culture we may also see a shift in the places to smoke with a possibility of a move 'of places to smoke' following 'the places to drink' or vice versa.

In some cases since the introduction of the ban alcohol and cigarettes cannot be consumed simultaneously within the pub facilities. Alcohol is now largely consumed within the pub while cigarettes mainly consumed outside the main pub space in a smoking area or outside the pub. The spatial segregation of smoking may have resulted in its ties with alcohol being severed somewhat and instead the creation of smokers on a 'smoking island' [12]. So not only are the places where a smoker can smoke changed or moved but perhaps the associated behaviour of drinking alcohol (in a pub) is prevented for some.

Social relationships

Could the absences of a friend results in new social interactions in these spaces? Could through the acknowledgment of similar plight (group formation by stigmatisation [26]) to smoke, create an opportunity for conversation or diffuse invasion of personal space? Does 'smirting' exist where conversation between strangers occurs while in the smoking area? Could this be an attraction for non-smokers to frequent the smoking island?

We will ask both smokers and non-smokers

'Do you non-smoking friends join you in the smoking area?'

'Do you join your friends who smoke in the smoking area?'

*'do you think the pub as a place to socialise has changed because of the ban' and
'do you think it is easier to talk to strangers in the smoking area than in the rest of
the pub?'*

Stigmatisation

While investigating changes in smoking behaviour within the life stages framework and in reference to changes in behaviour since the smoke-free workplace legislation we will also try to determine the level of restriction felt as a consequence of the legislation and by restrictions developed by family and friends. We will ask participants 'can you smoke where and when you wants now (at home and socially) illuminating physical restrictions imposed on smokers. The pub as a social setting also presents different restrictions on smoking; 'where do you smoke when you go to a pub? And if you can drink while smoking 'can you also drink in this space?'

Once the degree of restriction is determined we will then enquire through a variety of questions if these restrictions are producing stigma and what extent friends and family are involved in formation of smokers' stigma.

'Do others (friends, family, work mates) talk to you about your smoking (positive or negative)?'

'How do your close friends or family feel about smoking?'

'How do you feel about other people talking to you about your smoking?'

'Do you change when, where and how much you smoke when you are with different people?'

'Have you ever felt uncomfortable about your smoking?'

'How do you think others feel about your smoking (e.g. family friends or strangers)?'

'Do you find that people notice your smoking more or less since the ban?'

In the context of restrictions imposed upon smoking socially we will investigate stigma in the pub. Coupled with information gathered on the type of facilities provided for smokers in their regular pub; the response of smokers to restrictions generally and their existing stigma, we will look specifically at the contribution of the smoking island within the pub to stigma by asking;

'When you first heard about the ban what did you think of it?'
'Do you ever feel uncomfortable or out of place when smoking? If so in what situations'
'Do you ever feel embarrassed or awkward about your smoking?'
'Do you ever feel guilty for smoking?'
'Some people have argued that smoking areas make people feel like outsiders, do you agree?'
Does it bother you that you now have to go to an outside area to smoke? Do you go out to smoke alone, and does that bother you?'
'Do you feel conscious /aware of your smoking now that you have to go to this area to smoke?'
'How do you feel about going outside to smoke?'
'Where do you hate/enjoy smoking?'
'What do you think of passive smoking in smoking areas?'

To take account of smoker shame and to understand why smokers may consider these restrictions as acceptable we will ask 'what do you think about other people smoking around you? 'how do you feel about smoking, in general and since the introduction of the ban?'

Life Stages

Smoking initiation

We will establish before the interview if the participant is a smoker or non-smoker and if a smoker if a regular or occasional smoker.

Among all smokers we will determine 'age when you started smoking' and if the participant 'smoke everyday' to determine how routine the behaviour was initially. Also we will look at where and with whom the participants smoked which will give some insight into the role of peers and family on smoking initiation. We also want to investigate if smokers felt that they could 'smoke when and where they wanted', contributing to the acceptability of smoking for this individual at this time in the life stage of his/her smoking. All of this information will provide a frame for understanding smokers' responses to the legislative ban.

Current smoking behaviour

We want to determine what is different for a smoker now in comparison to when they first started smoking. Where are smokers going to smoke and whom are they smoking with 'can you give me examples of where and with whom you smoke now in home, work, and in the pub?' and 'is there any change in when and where you smoke from when you started smoking?'

Specifically we want to explore what was anticipated by smokers to be different for them because of the smoking ban (*'how did you think the ban was going to affect your smoking?'*) and if the ban was going to result in smokers attempting to quit (*'did you consider quitting before the ban came into effect?'*).

This is the ground work for understanding the eventual influence of the ban on behaviour change. Firstly we will establish if smoking was allowed in the work or the home environment before the ban and if smoking is allow since the ban. *'Did you smoke at work & home before the ban?'* and *'did the ban change where you could smoke at work and home?'* We can then examine *'how the ban first affected your smoking'* and *'how about now, four years later, are you smoking more/less?'* We also ask if the participant felt that the ban had influenced their smoking more than increases in price of cigarettes *'Do you think the ban impacted more on your smoking than say increases in price of cigarettes has?'*

And how the formation of smoking island (smoking areas) has changed *'how many cigarettes do you smoke when you go out to the smoking area'* and if you would smoke *'the same number of cigarettes if the smoking area was indoors or outdoors?'* We will also look for any evidence of compensatory smoking *'do you ever smoke your cigarettes faster in some circumstances or smoke extra before going to a place you know you cannot smoke?'* Or more consideration of quitting since the ban *'do you consider quitting more since the ban was introduced?'*

Occasional smokers have different smoking pattern to regular smokers and may or may not have established their smoking behaviour into a routine. Occasional smoker typically smoke when socialising or when drinking and may therefore only smoke once or twice a week. Occasional smokers have been noted to not identify themselves as current smokers during interview [27] as they feel their behaviour does not fall within a definition of smoker. Definitions of current smoker include *'smoking a cigarette in last month and smoke 1 cigarette per week'*. Due to the ad-hoc nature of an occasional smoker's behaviour they may be able to restrict or even stop smoking because of a new restriction like the ban. While among regular smokers the physiological addiction and the established daily routine may make the adoption to the ban more difficult.

Life events

Life events such as pregnancy, children in the home and personal or family illness may prompt some smokers to adapt behaviour such as leave the room or go outside to smoke while others might attempt to quit. Quit attempts or adoption of behaviour in the smokers' career is useful to interpret the context in which smokers may react or adapt to the ban as another life event. The influence of family/friends on smoker stigmatisation will draw these issues to the fore e.g.;

'Do others (friends, family, work mates) talk to you about your smoking (positive or negative)?'

'How do your close friends or family feel about smoking?'

'How do you feel about other people talking to you about your smoking?'

'Do you change when, where and how much you smoke when you are with different people?'

'Have you ever felt uncomfortable about your smoking?'

'How do you think others feel about your smoking (e.g. family friends or strangers)?'

'Do you ever feel guilty for smoking?'

Smoking status & practices

Smokers and non-smokers probably experienced the ban within the pub from different perspectives. Smokers may need to leave the pub to go outside to smoke, in which case non-smokers may be left alone inside the pub. Alternatively smokers and non-smokers may stay in the smoking area together (*Do you join your friends who smoke in the smoking area?*). The experience for both smokers and non-smokers could depend on the facilities available for smokers, how the smoker or non-smoker feels about being alone, the attitude of the non-smoker to smoking and SHS (*How do you feel about going outside with smokers?*) and the feeling of choice available to both smokers and non-smokers.

Since smoking is relocated to a space separate to the main pub the number of cigarettes consumed while socialising in a pub could be more or less dependant on a number of hypothetical situations:

Smokers may smoke less since the ban because

- 1) cigarettes are consumed largely without its associated alcohol or coffee
- 2) As the smoker has to leave the established space within the pub with friends or acquaintances or seats.

3) The smoker may be unfamiliar/uncomfortable in smoking area therefore rushing the cigarette or finishing it early.

Alternatively if smoking with friends or if facilities allow smoking and drinking to occur together maybe smoker consume more cigarettes.

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Topic Guide

Smokers and Ex-Smokers

Name, sex & DOB: Just for my records can you please just say your name and date of birth?

Today I want to talk to about your smoking and if your smoking has changed before and since the ban was introduced. Also I want you to think about how going to a pub may have changed for you since the ban was introduced.

Smoking behaviour:

Started smoking:

Can you tell me please what age were you when you started smoking?

Can you please tell me a little about when you started smoking; did you smoke everyday? at that time who smoked around you or with you? When you first started to smoke where did you smoke? Did you find it difficult to smoke when and where you wanted?

Current smoking: (Smoking before you quit –change tenses)

Can you please tell me a little about your smoking now: Can you give me examples of where and with whom you smoke now –home, work, pub?

Is there any change in when and where you smoke from when you started smoking?

Can you smoke where and when you want now (home/social)? Do other (friends, family, work mates) talk to you about your smoking (positive or negative)? How do most of your close friends or family feel about smoking? How do you feel about other people talking to you about your smoking? Do you change when and where and how much you smoke when you are with different people? What do you think about other people smoking around you?

Have you ever felt uncomfortable about your smoking?

Do you ever regret starting to smoke?

Do you think smoking is or was ever a normal behaviour?

Ex-smokers

Why did you decide to quit? Would increase in cost of cigarettes make you consider quitting?

Influence of the ban

When you first heard about the ban what did you think of it?

How did you think the ban was going to affect your smoking? Did you consider quitting before the ban came into effect?

How did the ban first affect your smoking? How about now, four years later, are you smoking more/less? (For example, do you ever smoke your cigarettes faster in some

circumstances or smoke extra before going to a place you know you cannot smoke?).

Do you think the ban impacted more on your smoking than say increases in price of cigarettes has?

Did you smoke at work & home before the ban? Did the ban change where you could smoke at work and home?

Do you consider quitting more since the ban was introduced?

How do you think others feel about your smoking (e.g. family/friends or strangers)?

How do you feel about smoking, in general and since the introduction of the ban?

Do you think smoking is or was ever a normal/accepted behaviour? Do you think fewer people are smoking because of the ban?

Who do you think enforces or polices the ban (pub owners/managers or the public)?

Do you find that people notice your smoking more or less since the ban? (Notice smokers in the streets, in smoking rooms, see people smoking & notice smell)

Do you think the government had a right to step in and ban smoking in public places

New pub culture & behaviour

Think of the pub that you regularly go to: What kind of pub is it?

How often do you go? Monthly/Weekly etc.

Where do you smoke when you go to a pub? Can you also drink in this space?

How do you feel about going outside to smoke?

Are some smoking areas better than others?

Why?

Which in your opinion are the best types of smoking areas?

E.g. Indoor or Outdoor?

Smoking at the front of the bar on the path.

To the back of the bar

In seating areas to the front

In seating areas to the back just for smokers

Beer gardens

Different types of rooms (larger, smaller, different ventilation)

What do you think of passive smoking in smoking areas?

Does passive smoke bother smokers or non-smokers more?

Does it bother you that you now have to go to an outside area to smoke? Do you go out to smoke alone? If yes does that bother you?

How many cigarettes do you smoke when you go out to the smoking area? Would you smoke the same number of cigarettes if the smoking area was indoors or outdoors?

Do you feel conscious/ aware of your smoking now that you have to go to this area to smoke?

Where do you hate/enjoy smoking?

Do your non-smoking friends join you in the smoking area?
Who in your experience enforces the ban?

Do you ever feel uncomfortable or self-conscious or out of place when smoking? If so in what situations?
Do you ever feel embarrassed or awkward about your smoking?
Do you ever feel guilty for smoking?
Or do you ever feel ashamed because you smoke?
Do you think the pub as a place to socialise has changed because of the ban?
Do you think it is easier to talk to strangers in the smoking areas than in the rest of the pub?(smirking)?

Some people have argued that smoking areas make people look or feel like outsiders, do you agree?

Risk Perception:

Are you more aware of the health effects of passive smoking since the introduction of the ban?
If yes in what way

Who informed you of the ill effects of passive smoking? Probe how they were informed? (media, government, GP, family, friends)
What did they tell you the risks of passive smoking are?

Do you think the risks of passive smoking are exaggerated?
If yes in what way?

What do your family and friends think of passive smoking?
Are there situations where people think more negatively about passive smoke?
Perhaps around children?

In some situations the ban may lead to informal bans on smoking in private homes?
Do you know anyone who doesn't allow smoking in their home? Do you allow smoking in your home? If yes why? If no why?

How aware were you of passive smoke 6 or 7 years ago?
How aware are you now of passive smoking? Has there been a change in how aware you are of the health risks?
In what situations would you notice passive smoke more or less often? (in cars, foreign holidays)

Topic Guide **Non-Smokers**

Name, sex & DOB: Just for my records can you please just say your name and date of birth?

Today I want to talk to about your experience of the smoking ban since it was introduced. Also I want you to think about how going to a pub may have changed for you since the ban was introduced.

Influence of the ban

When you first heard about the ban what did you think of it?

When the ban was actually introduced in 2004 what did you think of it? How did it affect you?

Four years later has that changed?

Who do you think enforces or polices the ban (pub owners/managers or the public)?

How do you feel about smoking, in general and since the introduction of the ban?

Do you think smoking is or was ever a normal/accepted behaviour? How do most of your close friends or family feel about smoking? Do you think fewer people are smoking because of the ban?

If not are there more people smoking? Why?

What do you think about other people smoking around you?

Do you think fewer people are smoking because of the ban? Do you think increases in price of cigarettes would have any impact on the number of people smoking?

Do you find that you notice people who are smoking more or less since the ban? (Notice smokers in the streets, in smoking rooms, see people smoking & notice smell)

Do you think the government had a right to step in and ban smoking in public places

New pub culture & behaviour

Think of the pub that you regularly go to: What kind of pub is it?

How often do you go? Monthly/Weekly etc.

Where do smoker smoke at this pub? Can you also drink in this space?

What do you think of smoking areas in general?

Who in your experience enforces the ban?

Which in your opinion are the best types of smoking areas? Why?

E.g. Indoor or Outdoor?

Smoking at the front of the bar on the path.

To the back of the bar

In seating areas to the front

In seating areas to the back just for smokers

Beer gardens

Different types of rooms (larger, smaller, different ventilation)

What do you think of passive smoking in smoking areas?

Does passive smoke bother smokers or non-smokers more?
Do you join your friends who smoke in the smoking area?
How do you feel about going outside with smokers?

Do you think smokers you know are more conscious of their smoking now that the ban is here? Or self conscious about their smoking? Do you think smokers are sorry or regret starting smoking?
Do you think the pub as a place to socialise has changed because of the ban?
Do you think it is easier to talk to strangers in the smoking areas than in the rest of the pub?(smirking)?
Some people have argued that smoking areas make people feel or look like outsiders, do you agree?

Do you ever feel uncomfortable when with someone who is smoking? If so in what situations?
Do you ever feel embarrassed being with a smoker?
Or do you ever feel ashamed because you are with or know a smoker?

Risk Perception:

Are you more aware of the health effects of passive smoking since the introduction of the ban?
If yes in what way

Who informed you of the ill effects of passive smoking? Probe how they were informed? (media, government, gp, family, friends)
What did they tell you the risks of passive smoking are?

Do you think the risks of passive smoking are exaggerated?
If yes in what way?

What do your family and friends think of passive smoking?
Are there situations where people think more negatively about passive smoke? Perhaps around children?
What do you think about smoking around children? (on the street, in the smoking room, at home, in the car)
If it is bad why?
Where do you think it is worst?
Why is it different than if someone is smoking around an adult in these areas?

In some situations the ban may lead to informal bans on smoking in private homes?
Do you know anyone who doesn't allow smoking in their home? Do you allow smoking in your home? If yes why? If no why?

How aware were you of passive smoke 6 or 7 years ago?
How aware are you now of passive smoking? Has there been a change in how aware you are of the health risks?
In what situations would you notice passive smoke more or less often? (in cars, foreign holidays)